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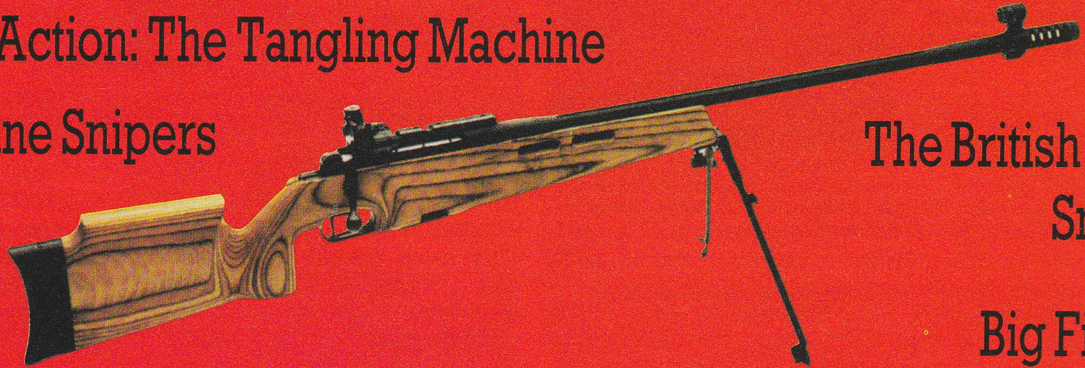
Royal Marine Snipers



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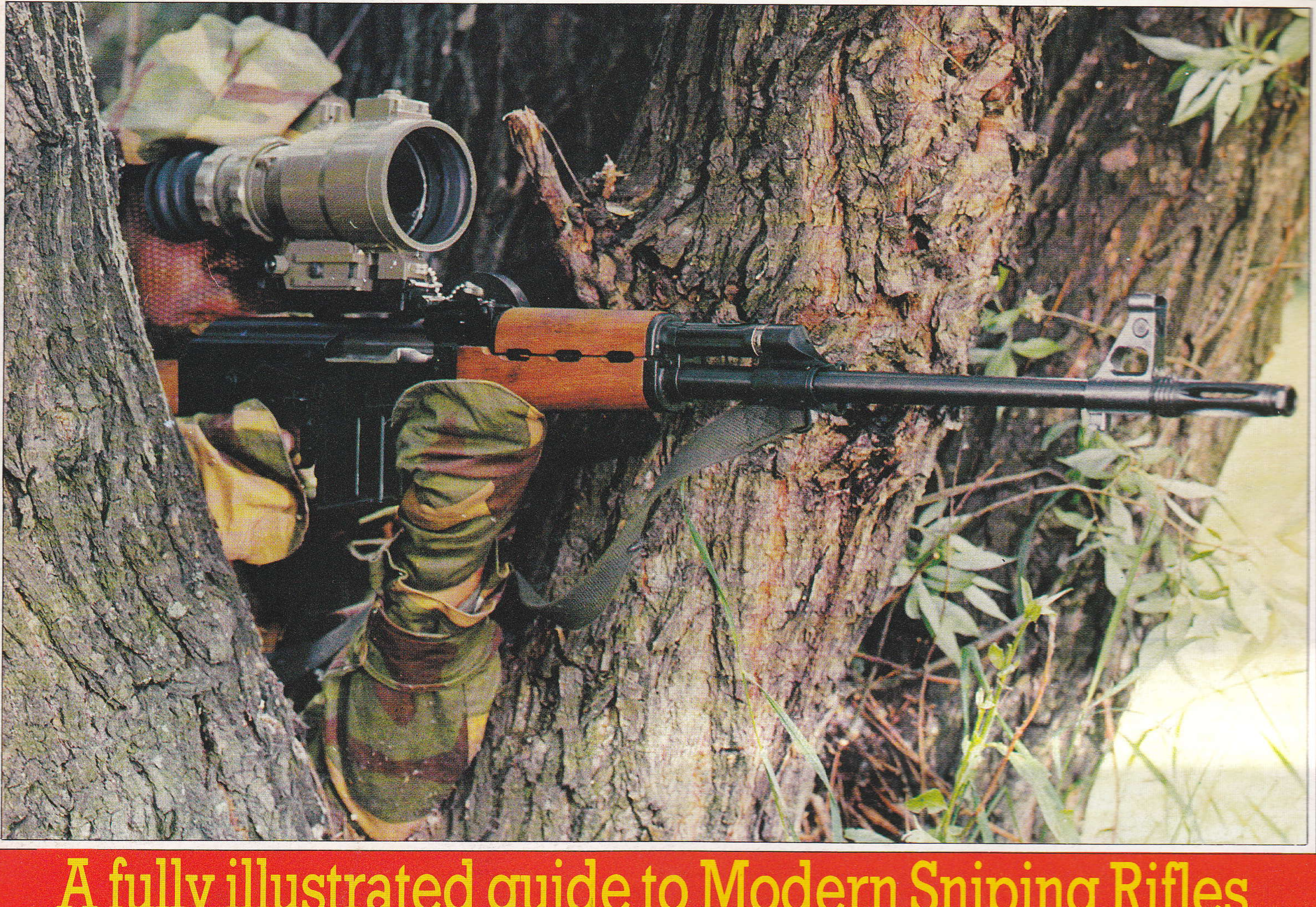

A fully illustrated guide to Modern Sniping Rifles

WAR MACHINE

Volume 12 **Issue 136**

Published by
Orbis Publishing Ltd
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Editorial Offices
War Machine
Aerospace Publishing Ltd
179 Dalling Road
London W6 0ES

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Design: Rod Teasdale
Colour Origination: Imago Publishing Ltd, Thame, Oxon

Typesetting: SX Composing Ltd

Film work: Precise Litho Ltd

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10864

Printed in Great Britain
by The Color Factory

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0488 72666

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Orbis Publishing Ltd
Orbis House
20-22 Bedfordbury
London WC2N 4BT
Telephone: 01-379 6711

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Marketing Manager: Paul Stelb

WAR MACHINE

Forthcoming issues feature:
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Picture acknowledgements

Cover photograph: Federal Directorate of Supply and Procurement, Beograd, Yugoslavia. **2701:** Federal Directorate of Supply and Procurement, Beograd, Yugoslavia/T.J. **2702:** Fotoatelier A. C. Kranzmayr. **2703:** ECP Armées. **2704:** Nigel Foster/Nigel Foster. **2705:** Nigel Foster (four). **2706:** Nigel Foster. **2707:** T.J. **2708:** Mauser. **2709:** Mauser/Mauser/Mauser. **2712:** Steyr/ECP Armées. **2713:** Galil. **2715:** US Army/US Army. **2716:** Israel Military Industries/Israel Military Industries/Fabrique Nationale d'Armes de Guerre. **2717:** Fabrique Nationale d'Armes de Guerre. **2718:** T.J./T.J. **2719:** T.J./Imperial War Museum. **2720:** Federal Directorate of Supply and Procurement, Beograd, Yugoslavia/Federal Directorate of Supply and Procurement, Beograd, Yugoslavia.

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Modern Sniping Rifles

The Yugoslav M76 semi-automatic rifle, seen here fitted with a passive optical night sight, has obvious design similarities to the Soviet Dragunov SVD. It uses a 10-round magazine and is in service with the Yugoslav armed forces.

Since the introduction of accurate long-range firearms to the battlefield, the sniper, or sharpshooter as he used to be called, has had an influence upon the conduct of war out of all proportion to the numbers involved in his deadly trade. In that time his weapon has evolved enormously.

The modern sniping rifle is a remarkable piece of equipment that embodies all the finer points of the gun designer's, gun maker's and ammunition specialist's skills. Although it is very often based on an existing design it is usually manufactured to high degrees of precision to ensure that its user, the sniper, secures the all-important first-round hit on the target every time.

Sniping rifles fall into two general categories. The first has already been mentioned: the conversion of the existing weapon, usually a standard service rifle. These very often do not look all that different from the originals and can often be handled and used in much the same manner. The second category is very different, for its members are the specially designed rifles that often appear not to be rifles at all but some form of 'space-age' weaponry. There are several examples of the latter in this study and they will be easily discerned. They seem to be (and often are) marvels of the gun maker's art, but they are rarely weapons that the sniper will want to use on the battlefield. All sniper's rifles require special care and handling, but some of the more recent examples show every mark of being laboratory test tools rather than practical weapons.

Most of the current crop of sniper's rifles are included in this study. They include stalwarts such as the Soviet SVD and British L42A1, magnificient tools for the job such as the US Marines' M40A1 and the superlative Mauser SP 66. No doubt less readily acceptable to the sniper in the front line are designs such as the Walther WA2000 and the decidedly odd-looking Iver Johnson rifles. But one thing all these rifles have in common is that they are extremely accurate, and in the hands of the right man they are lethal.

The Israelis have eschewed the radical design approach which has produced such over-complex and unreliable weapons as the Walther WA 2000 in favour of the studied development of their existing service rifle into the Galil sniper.

AUSTRIA

7.62-mm SSG 69

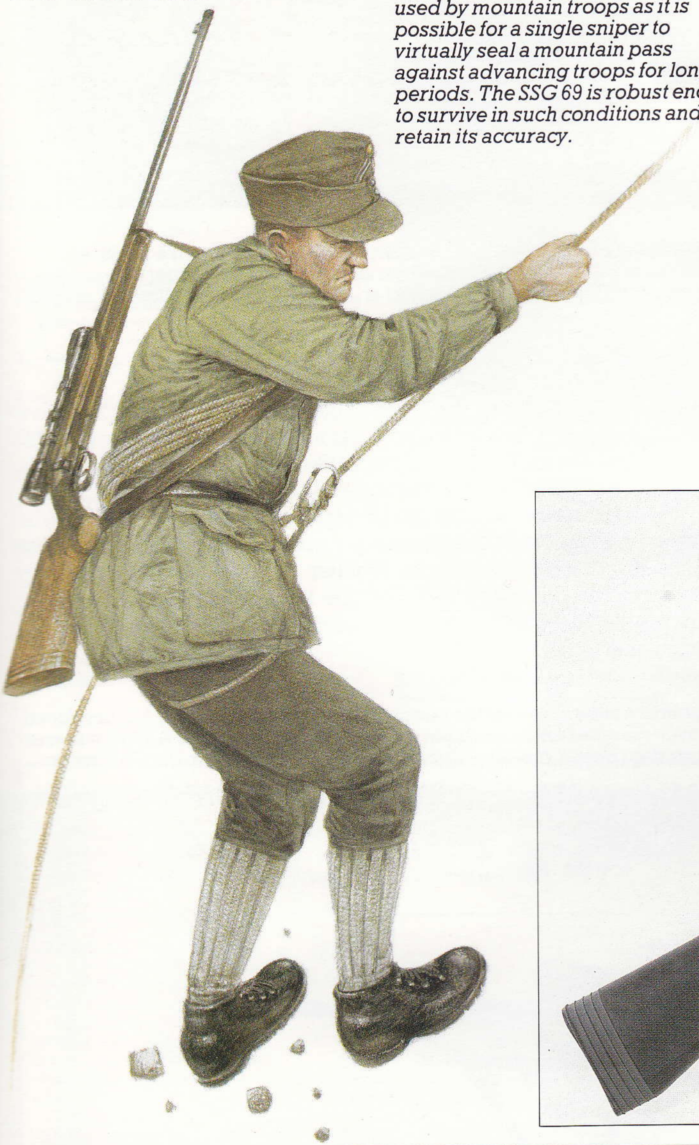
With this Austrian rifle the designation **SSG 69** stands for **Scharfschützengewehr 69** (sharp-shooter rifle 69), 1969 being the year of the weapon's acceptance for service by the Austrian army. It is manufactured by the Steyr-Daimler-Puch AG concern at Steyr and was, in 1969, the latest in a long line of rifles produced by the concern.

The 7.62-mm (0.3-in) SSG 69 has some unusual design features, one of them being the use of a Männlicher bolt action with a form of rear locking instead of the far more common Mauser forward-lug locking. The bolt action is now uncommon, although it has been used on other recent Steyr rifles, and is so arranged that the entire action is very strong and the chamber is well within the receiver for added rigidity. A safety catch locks both the bolt and firing pin when engaged. The barrel is cold-forged using a machine hammering process in which the barrel rifling is hammered into the bore using a mandrel. Another odd feature is the use of the Männlicher rotary magazine, a design feature that dates back to well before World War I. This rotary magazine holds five rounds, but a more orthodox 10-round box magazine can be fitted.

The rifle stock is made of a synthetic material and is adjustable in length to suit the firer. The firer can also adjust the double-pull trigger pressure. It is also possible to make various adjustments to the standard Kahles ZF69 telescopic sight which has a magnification of ×6. Other forms of sight (including night sights) can be used on the SSG 69, the receiver having an overhead longitudinal rib that can accommodate a wide range of vision devices. 'Iron' sights are provided for emergency use only.

The SSG 69 is very accurate. Trials have shown that it is possible to fire 10-round groups no larger than 400 mm (15.75 in) at 800 m (875 yards), which is the maximum graduated range of the ZF69 sight; at shorter ranges the groupings get much tighter.

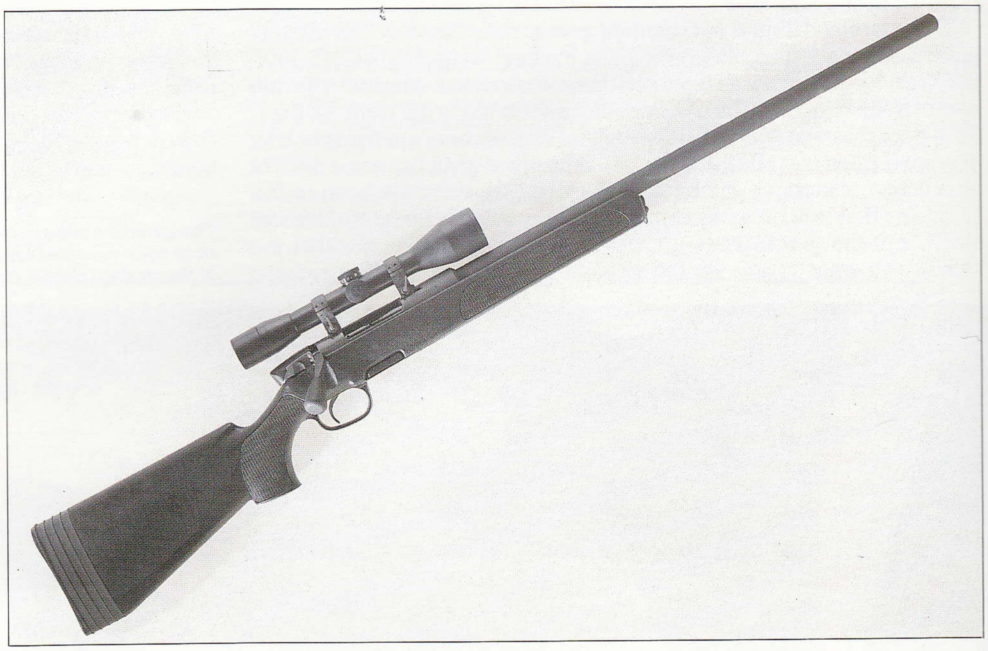
Since the introduction of the SSG 69 Steyr has developed some more advanced sniper rifle models, but the SSG 69 remains in service with the Austrians for the simple reason that it is an excellent military sniper's rifle and far more practical than some of the more modern technical marvels now available. A target shooting version of the SSG 69 with a heavier barrel and match sights has been produced.



The Steyr SSG 69 rifle is the standard Austrian army sniper's rifle, and is used by mountain troops as it is possible for a single sniper to virtually seal a mountain pass against advancing troops for long periods. The SSG 69 is robust enough to survive in such conditions and retain its accuracy.

Specification

SSG 69
Calibre: 7.62 mm (0.3 in)
Lengths: overall 1140 mm (44.9 in); barrel 650 mm (25.6 in)
Weight: empty, with sight 4.6 kg (10.14 lb)
Muzzle velocity: 860 m (2,821 ft) per second
Magazine capacity: 5-round rotary or 10-round box



The Steyr SSG 69 rifle uses a Kahles ZF69 telescopic sight graduated up to 800 m (875 yards) – this example is not fitted with the usual 'iron' sights. The SSG 69 uses an unusual five-round rotary magazine, but can also be fitted with a 10-round box magazine.

ITALY

Beretta Sniper

When the market for high-precision sniper's rifles expanded in the 1970s, virtually every major small-arms manufacturer in Europe and elsewhere started to design weapons they thought would meet international requirements. Some of these designs have fared better than others on the market, but one that does appear to have been overlooked by many is the **Beretta Sniper** 7.62-mm (0.3-in) sniping rifle. This design appears to have been given no numerical designation and it has only recently appeared on the scene, two factors that would normally indicate that the rifle is only just out of the development stage. But there are reports that it is already in use with some Italian paramilitary police units for internal security duties.

Compared with many of the latest 'space-age' sniper rifle designs, the Beretta offering is almost completely orthodox but well up to the usual high standards of Beretta design and finish. The Sniper uses a manual rotary bolt action allied to the usual heavy barrel, and one of its most prominent features is the large and unusually-shaped hole carved into the high-quality wooden stock that forms a prominent pistol grip for the trigger.

Despite the overall conventional design there are one or two advanced features on the Sniper. The wooden forestock conceals a forward-pointing counterweight under the free-floating barrel that acts as a damper to reduce the barrel vibrations produced on firing. At the front end of the forestock is a location point for securing a light adjustable bipod to assist aiming. The underside of the forestock contains a slot for an adjustable forward hand stop for the firer, and this forestop can also be used as the attachment point for a firing sling if one is required. The butt and cheek pads are adjustable and the muzzle has a flash hider.

Unlike many of its modern counterparts the Beretta Sniper is fully provided with a set of all-adjustable precision match sights, even though these would not normally be used for the sniping role. Over the receiver is a standard NATO optical or night sight mounting attachment to accommodate virtually any military sighting system. The normal telescopic sight is the widely-used Zeiss Divari Z with a zoom capability from ×1.5 to ×6, but other types can be fitted.

Specification

Beretta Sniper
Calibre: 7.62 mm (0.3 in)
Lengths: overall 1165 mm (45.87 in); barrel 586 mm (23 in)
Weights: empty 5.55 kg (12.23 lb); complete 7.2 kg (15.87 lb)
Muzzle velocity: about 865 m (2,838 ft) per second
Magazine capacity: 5 rounds

FRANCE

FR-F1 and FR-F2

When the French army required a sniper's rifle to replace the varied selection of weapons which it had used since World War II, it decided that the easiest design course to follow was to modify its existing service rifle, the 7.5-mm (0.295-in) modèle 1936. This rifle had the dubious distinction of being one of the very last bolt-action rifles to be accepted as a standard service weapon by any of the major European powers, but it was not regarded as a very good design, even at the time, and was used mainly because of its French origins. Using this weapon as a starting point the resultant sniper's rifle, the **mle FR-F1**, emerged as not particularly brilliant.

The number of modifications involved in converting the modèle 1936 into the FR-F1 meant that very little of the original remained; it was just about discernible that the modèle 1936 had been used as the origin, but that was all. The main change was the introduction of a bipod, the addition of a pistol grip for the trigger, a longer barrel with a long flash hider, and a telescopic sight. The butt was provided with a cheek rest and the bolt action considerably altered.

In this photograph the French sniper is using the telescopic sight of his FR-F1 as an observation aid, resting the barrel on a tree branch. He would never fire the weapon from such a stance, for accuracy would be minimal.

Even with all these alterations the mle FR-F1 was not an immediate international success. For a start, the rifle fired the old French 7.5-mm standard cartridge at a time when other nations were changing to the new 7.62-mm (0.3-in) NATO round. This change to the new cartridge was so pronounced that eventually the French had to convert to it as well, and later-production mle FR-F1s were chambered for 7.62-mm ammunition; many of the older 7.5-mm rifles are still in use, however. The modèle 1936 bolt action was also retained, albeit in a much altered form. This action was regarded as an awkward one to use, and even in its revised form was little improved. The bipod was also rather flimsy and difficult to adjust. Also the weapon was considered by many to be too heavy.

The mle FR-F1 has now been replaced by the **mle FR-F2**. Basically this is much the same as the earlier weapon, but the long barrel is now encased in a thick black nylonite sleeve to reduce the heat haze from the barrel that might interfere with the performance of some night sights. The bipod has also been altered and relocated so that it is now secured directly to the barrel. The forestock has been changed from all-wood to all-metal, covered in a plastic coating. The mle FR-F2 has only been in production for a limited period so it is still too early to determine how it will fare in international esteem.

Specification

FR-F1

Calibre: 7.5 mm (0.295 in) or 7.62 mm (0.3 in)

Lengths: overall 1138 mm (44.8 in); barrel 552 mm (21.73 in)

Weight: empty 5.42 kg (11.95 kg)

Muzzle velocity: 852 m (2,795 ft) per second

Magazine capacity: 10 rounds

UK

Rifle 7.62-mm L42A1

The Lee-Enfield rifle has had a long career with the British army reaching back to the 1890s, and throughout that time the basic Lee-Enfield manual bolt mechanism has remained little changed. It is still in service with the army to this day in the form of the **Rifle 7.62-mm L42A1**. These weapons are used only for sniping, and are conversions of 0.303-in (7.7-mm) No. 4 Mk 1(T) or Mk 1*(T) rifles, as used during World War II. The conversions involved new barrels, a new magazine, some changes to the trigger mechanism and fixed sights, and alterations to the forestock. The World War II No. 32 Mk 3 telescopic sight (renamed the L1A1) and its mounting over the receiver have been retained, and the result has for long been a good, rugged and serviceable sniping rifle, used not only by the army but also by the Royal Marines.

In modern terms the L42A1 is very much the product of a previous generation, but it can still give excellent first-shot results at ranges over 800 m (875 yards), although this depends very much on the skill of the firer and the type of ammunition used. Normally the ammunition is selected from special 'Green Spot' high-accuracy ammunition produced at the Royal Ordnance facility at Radway Green. The rifle itself is also the subject of a great deal of care, calibration and attention. When not in use it is stowed (and transported) in a special wooden chest that contains not only the rifle but the optical sight, cleaning gear, firing sling and perhaps a few spares such as extra magazines: the L42A1 retains the 10-round magazine of the 0.303-in version but with a revised outline to accommodate the new rimless ammunition. The often-overlooked weapon record books are also kept in the chest.

The L42A1 is not the only 7.62-mm Lee-Enfield rifle still around. A special match-shooting version known as the **L39A1** is still retained for competitive use, and there are two other models, the **Envoy** and the **Enforcer**. The former may be regarded as a civilian match version of the L39A1, while the Enforcer is a custom-built variant of the L42A1 with a heavier barrel and revised butt outline, produced specifically for police use. The L39A1 and Envoy are not normally fitted with optical sights but the basic information relating to the L42A1 applies to the three variants.

The L42A1 is now due to be replaced by a new sniper's rifle, a 7.62-mm design from Accuracy International.

Specification

L42A1

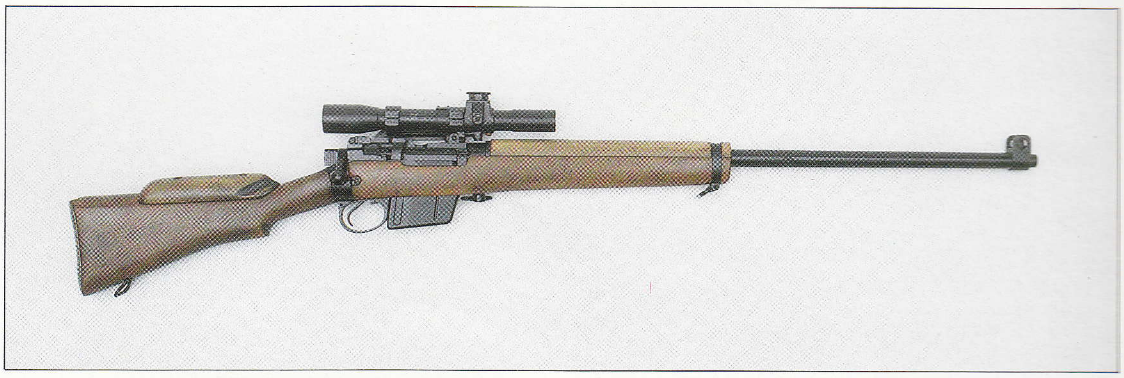
Calibre: 7.62 mm (0.3 in)

Lengths: overall 1181 mm (46.5 in); barrel 699 mm (27.5 in)

Weight: 4.43 kg (9.76 lb)

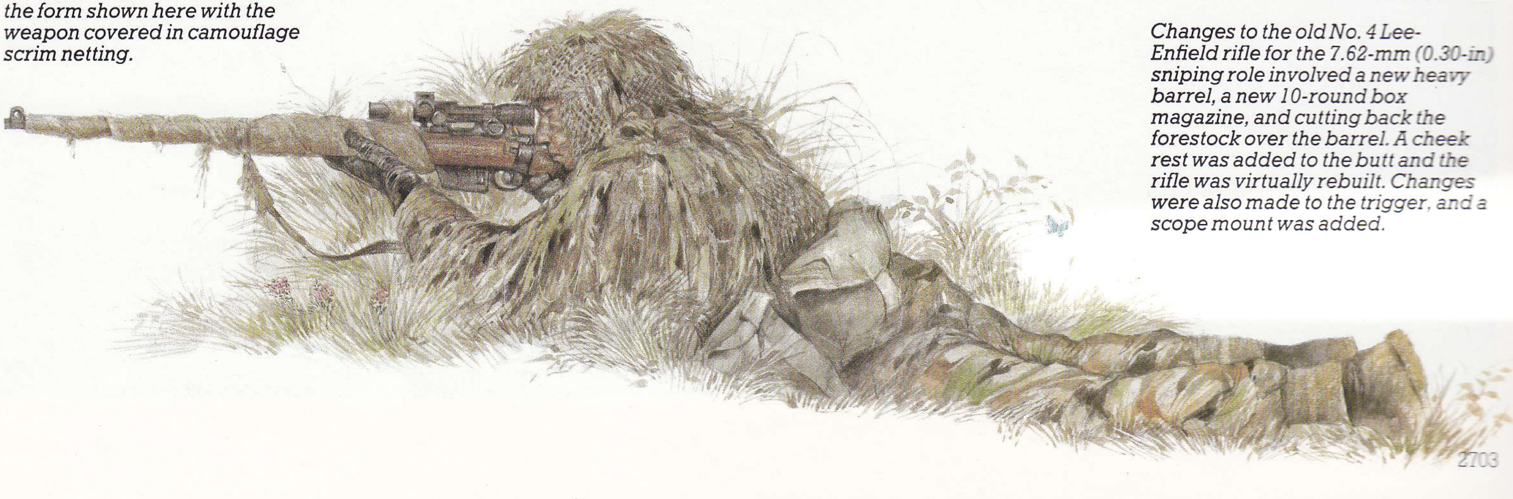
Muzzle velocity: 838 m (2,750 ft) per second

Magazine capacity: 10 rounds



Changes to the old No. 4 Lee-Enfield rifle for the 7.62-mm (0.30-in) sniping role involved a new heavy barrel, a new 10-round box magazine, and cutting back the forestock over the barrel. A cheek rest was added to the butt and the rifle was virtually rebuilt. Changes were also made to the trigger, and a scope mount was added.

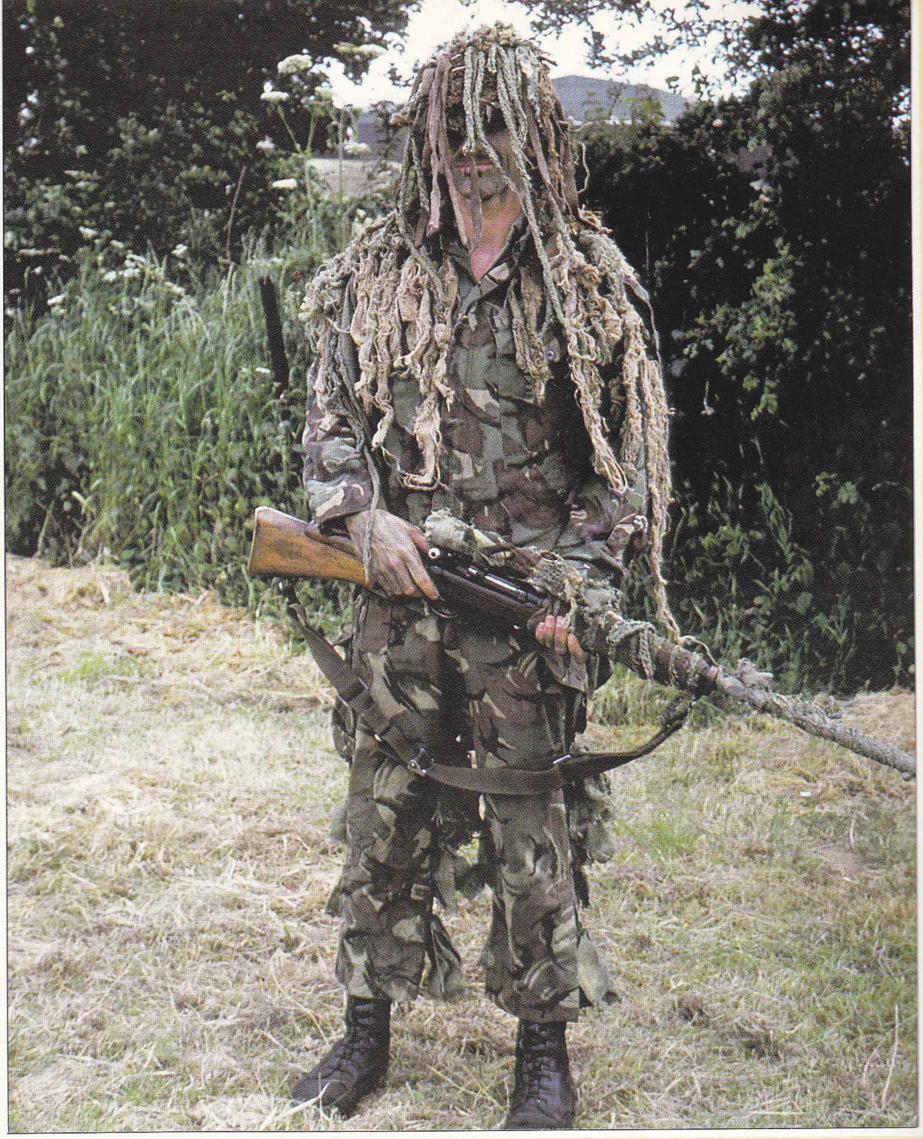
Below: The L42A1 rifle is a 7.62-mm (0.30-in) conversion of an earlier 0.303-in (7.70-mm) Lee-Enfield rifle, and it has served the British Army well over the years. It was used by the Army and the Royal Marines during the Falklands war, usually in the form shown here with the weapon covered in camouflage scrim netting.



Royal Marine Snipers

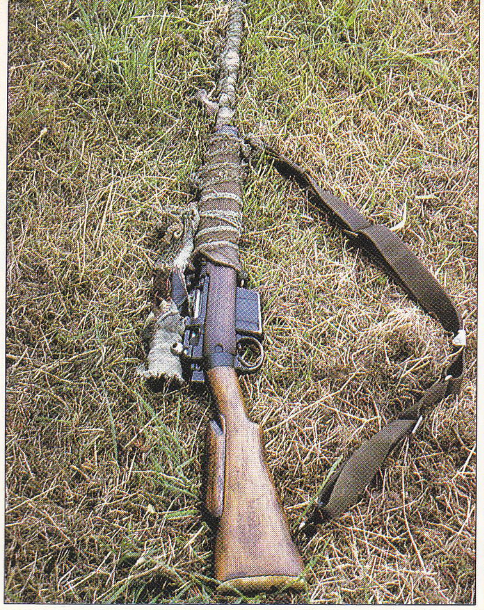
For many years, the armies of the world have put their faith in firepower, with the notable exception of Britain. To the British, marksmanship has remained paramount, and the craft of the sniper has survived – nowhere more than in the Royal Marines.

Elements of 3 Commando Brigade, Royal Marines, are landing in the Falklands: although the advance into the hinterland is progressing smoothly, the beach-head is crowded with men and material. Suddenly, a soldier is jerked off his feet by a bullet smacking into his helmet. No more shots are fired at the British forces during that afternoon, and the soldier is more shaken and bruised than wounded. All available intelligence shows clearly that there are no Argentines within 10 miles of the beach-head. But the possibility exists that, somewhere, a sniper is still within killing range. With

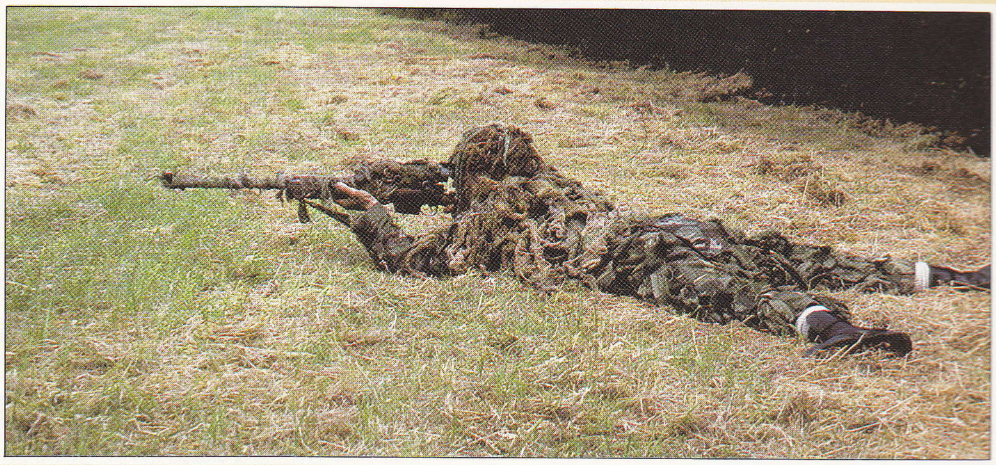


Right: The first attribute of the successful sniper is to remain undetected. To that end, a mastery of effective camouflage is essential – perhaps more so than supreme accuracy with a weapon. The aim is to break up recognizably human outlines and to hide the pink of bare flesh.

Below: Once in position, much of a sniper's job is observation. When success or failure of a mission depends upon the results of a single shot, then a solid professionalism is the best guarantee of being in the right place, and provides the ability to wait and judge the right moment to fire.



Royal Marine snipers are currently equipped with a modified version of the venerable Lee-Enfield, the L42A1 chambered to fire the 7.62-mm NATO round. While perhaps not as accurate as the latest high-tech wizardry, the basic design has stood up to battlefield conditions for decades.



The classic marksman's position is demonstrated in the open field. While being a natural good shot is less important than one might think – good shooting can be taught – the sniper must be able to hit a man-sized target at ranges up to 800 m, and a head-sized target at 400 m.

such a threat hanging over them, people find themselves moving more cautiously, staying under cover that little bit longer than before, and the beach-head slowly begins to clog up. It takes nearly eight hours for life to return to normal. In fact the shot turned out to have been fired by a fleeing Argentine, and only in the general direction of the beach-head rather than at any specific target; it was a fluke hit, but the incident demonstrates the importance of the sniper. If the Argentines had deployed snipers in this case, the landings would not have gone so smoothly, and the irony would have been that it was the Royal Marines who kept sniper training alive after 1945. A double irony is that any Argentine sniper might well have been trained in happier times by the US Marines who 'borrowed' their sniper training course from the Royal Marines' own course at the Commando Training Centre (CTC) at Lympstone in Devon.

Civil War origins

The chief attributes of a sniper are fieldcraft, long-range accuracy, patience, and a lively intelligence. The value of sniping has long been appreciated; in the English Civil War some officers brought the gamekeepers from their estates and employed them for accurate long-range fire specifically aimed at enemy officers and standard bearers. By the time of the American Civil War optical assistance in the shape of telescopic sights had appeared, and the lives of officers, and specialists like gunners, became markedly more dangerous. General Sedgewick's last words were: "Don't worry men, they couldn't hit an elephant at this dist. . . ."

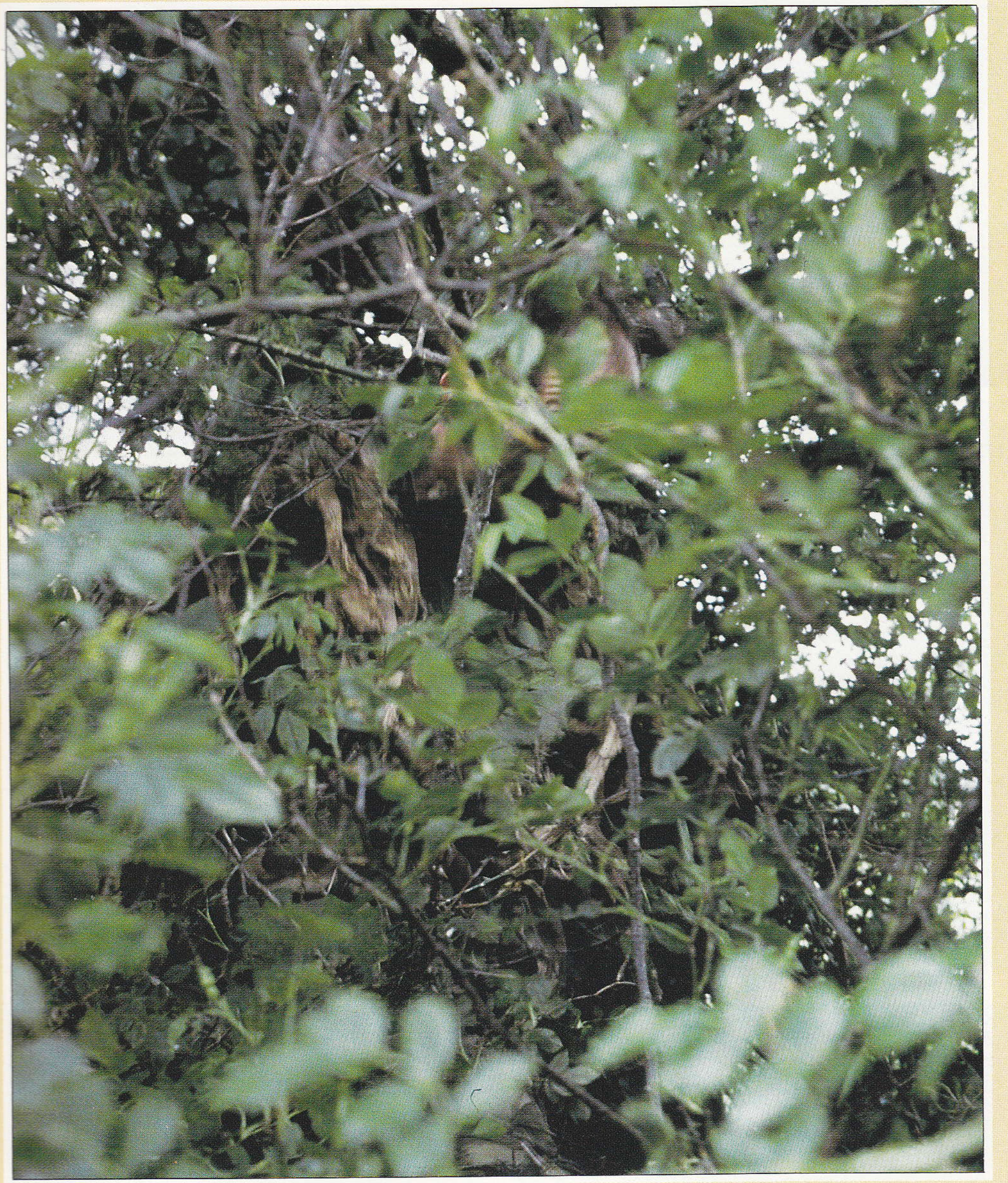
Snipers were used to great effect in both world wars, but sniper training in the British British army (and, indeed, throughout NATO) was discontinued in the post-war years. Planners envisaged a massive armoured Soviet advance being met by a massive NATO armoured counter-attack. The battlefield would belong to tanks, armoured personnel carriers and, quite possibly, nuclear weapons. Individual infantry skills paled into insignificance against the prospect of bigger and better hardware; all planning was devoted to a possible major conflict in which there seemed to be little scope for the lone sniper. But instead of World War III, Britain found herself fighting a succession of small wars in Malaya, Oman, Cyprus, Kenya, and Aden: limited conflicts which General Kitson dubbed 'Low Intensity Operations'. They were all infantry wars in which all the old skills of the PBI (Poor Bloody Infantry) were needed. Snipers were especially needed, and were eventually supplied. The US Army learned the same lesson during the tortuous struggle in South Vietnam and, after this unfortunate hiatus, sniper training began anew. But while most armies had abandoned specialist training, the Royal Marines had resolutely maintained their course in the belief that sniping is of particular importance in commando operations. When the British army rediscovered the value of sniping it looked to Lympstone to train instructors, and so did the US Marine Corps.

The course at Lympstone remains one of the most exacting in the world. Less than half the candidates pass out as a sniper/first class, although the Marines point out that, even if you fail to pass the course, you will be a better soldier for the experience and an ideal choice as a sniper's 'number two': the observer and bodyguard tasked with protecting the sniper from immediate threats, leaving him free to get on with his main job. Before looking at the course and discovering why it is so exacting, it is important to understand what makes a sniper and what he is expected to do.

In a conventional war, the sniper dominates the ground between opposing troops. His targets are other snipers, forward patrols, officers and NCOs, signallers, runners and

Much of the skill of a sniper lies in an ability to utilize cover effectively. By picking his hide carefully, a sniper can merge into the background and from 50 m will be hard to see while he is getting into position, let alone when he has settled down.

The art of concealment is far more than finding a convenient bush to hide behind. A sniper has to be able to see his target, so excessive cover in front, although hiding the sniper, will also obscure the potential target from view.



By selecting the background to his hide as well as the foreground, the trained sniper can merge into the landscape. From 10 m, he is only visible to the camera because he has taken off his camouflaged headgear.

weapons crew: in other words, anyone engaged on a special task whose loss would cause disruption and confusion. A sniper is expected to lay down harassing fire at ranges up to 1000-m. But a sniper is more than a well-trained killing machine; he is also required to observe all enemy activity and report back. Trained to remain concealed for days, sometimes weeks, this task is as important as the more obvious sniping missions. When friendly forces are retreating, a sniper can slow down the enemy advance quite considerably, not by inflicting massive casualties but by eliminating the men necessary to control the advancing units. Few armies are blessed with soldiers sufficiently trained and motivated to take over when their leaders are picked off. Indeed, with modern forces tending to disperse over wider areas, the value of the sniper has increased considerably as most military units are entirely dependent on a small cadre of officers and communications specialists. Knock them out, and the unit can no longer function effectively.

Snipers are obviously best suited to the type of terrain in which their ability to kill and observe at long ranges can best be utilized (temperate, arctic and desert). At the same time, because their fieldcraft is of such a high order, snipers also prove effective in jungle/dense vegetation conditions, particularly when employed against an enemy strongpoint.

Northern Ireland has proved just how useful snipers are in an internal security situation. Most internal security situations require minimum force to be used, and a sniper can bring discriminating fire to bear in urban areas. Usually working in two-man teams, the snipers are inserted into their OP/hide during what passes for an ordinary patrol, usually at night. In this sort of situation they will also use a wide range of sophisticated surveillance devices. This is not only because a trained sniper is also a superb intelligence-gatherer: if a terrorist is shot, you must be able to show that you had good reason for shooting him (or her), and a photograph of the dead terrorist carrying a gun tends to convince all but the most fanatical or naive critic. The problem in Northern Ireland is that if a terrorist is shot while carrying a gun, his 'minders' will rush in to try to get the gun away so that the security forces can once again be accused of killing an unarmed (and therefore innocent) man. Hence the need for good, accurate photography.

While most OPs are rooms (snipers may have to stay there for days or weeks on end), the sole object of the exercise is to obtain a kill, and a sniper does not expect to be in position for too long, so any and every possible type of hide is used. In the past this has included the crawl space between floors, with a single brick then removed from the outside wall. Imagine the skill, dedication and patience necessary to lie prone, cramped into a 46-cm (18-in) space for hour upon hour, and then to have the ability to loose off a single shot and so take out a terrorist. This rises the question of what is it that makes a sniper. What kind of man is a sniper, and what are the inherent military skills he should possess?

A sniper's skills

A sniper does not need to be a natural shot, for shooting can be learnt. But a sniper does have to be a natural soldier: he really is an infantryman par excellence. And, in the words of one of the Lympstone instructors, 'A sniper should have quite a lot of the poacher in his make-up.'

A sniper does not need vast military experience: the Royal Marines regard sniping as a skill of 'ordinary' marines. Officers and NCOs take exactly the same course, and are judged equally harshly. The sniper tends to be slightly more individualistic than his fellows, but his self-discipline and ability to carry out the most exacting order is that much greater. The sniper tends to enjoy pitting his wits against the enemy: but the moment he feels too superior, he is dead. Sniping requires a high degree of dedication and the good sniper finally develops an almost sixth sense about his job. If there is one quality snipers share before their training it is a natural awareness of, and the ability to be at one with, their surroundings; it is probably for this reason that most snipers, even those who operate well in an urban environment, have been brought up in the country. A sniper has to have an innate patience and to be mature enough to discover that during his training he must learn how to cope with his own strengths and weaknesses: one can lead to overconfidence, the other to loss of morale. The sniper is not a 'gung ho' cowboy: he is a solid professional with a great deal of common sense. Finally, the sniper has to have that one attribute possessed by all good soldiers: a sense of humour.

Lympstone course

The course at Lympstone trains Royal Marines, some army personnel and the occasional policeman. The course teaches shooting, camouflage and concealment, stalking, observation, distance judging and map reading. On average, only 45 per cent of all candidates pass, although obviously any police trainee is less concerned with the purely military aspects of the training, e.g. air photographic interpretation, map reading and 'stay behind techniques'.

Since the Royal Marines regard sniping as a natural extension of basic infantry skills, each developed to a specialist standard, they expect that all candidates should be above average and (more importantly) be capable of adding to these skills. On the first day the candidate is introduced to his weapons: the

Britain's New Sniping Rifle

After many years in service, the Lee-Enfield is to be replaced as the British Army's standard sniping rifle by a purpose-designed weapon manufactured by Accuracy International. Unlike its predecessors, the new weapon is not a conversion of a tried and trusted battle rifle but is more akin to the special target weapons used in the Olympic Games.

In its No. 4 Mk 1(T) and L42A1 forms, the Lee-Enfield No. 4 rifle has given British army snipers sterling service over the years, but these two weapons were originally straightforward conversions of standard rifles with few innovations for the sniper role. The L42A1 is still a good weapon, but time has marched on and technological advances now mean that something better can be provided. For some time the British army was prevented from getting replacement weapons for budgetary reasons, but during 1984 that changed and the army could specify to all concerned what it really wanted.

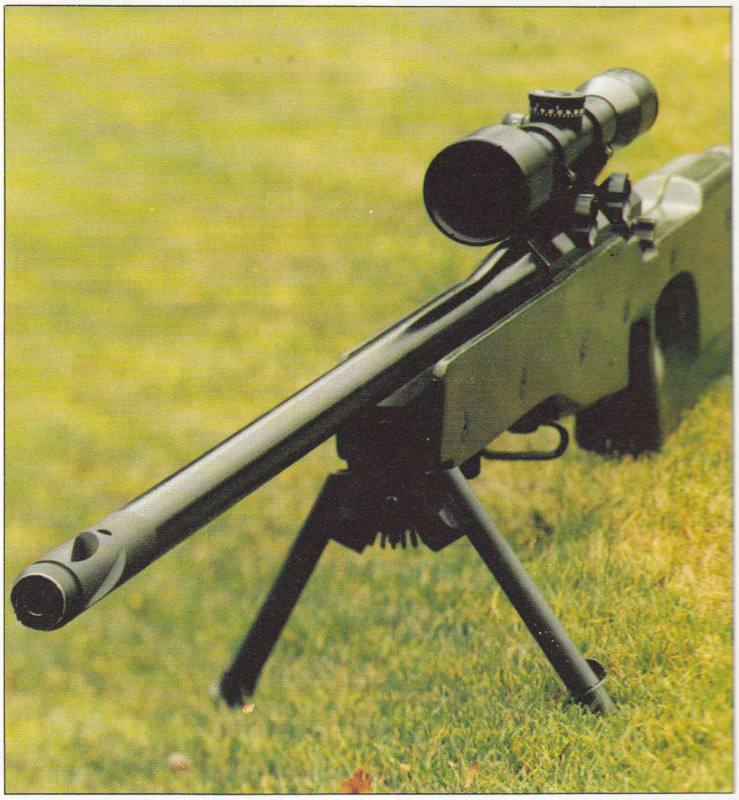
It was interesting to note that of the three weapons finally selected for final trials none are of the super-accuracy 'space-age' type. All three were conventional designs, brought up to date by the use of modern materials and design niceties; they were the Parker-Hale Model 85, a design from Interarms, and the Accuracy International Model PM. All three were subjected to extensive trials by the staff of the Small Arms School Corps at Warminster in Wiltshire and although there was apparently little to choose between the three, in the end the Accuracy International Model PM was selected. In this the evaluation team was probably influenced to some extent by experience gained from use of the Model PM by the SAS, which had already obtained a few of the type.

Olympic designer

The Accuracy International Model PM was designed by Malcolm Cooper, an Olympic gold medallist in rifle shooting and based at Portsmouth in Hampshire. The Model PM appears to be an entirely orthodox design but in this case the appearances are deceptive. The Model PM is in effect little more than a heavy stainless steel 7.62-mm (0.3-in) barrel secured to a bolted aluminium chassis. The entire weapon consists of a bipod, stock, action and butt all enclosed in plastic furniture provided for little reason other than to hold everything together and give it an acceptable appearance: for instance, although the forestock appears to enclose the barrel it does not touch the free-floating barrel at any point.

The Model PM uses a Tasco telescopic sight and has a forward-locking manual bolt action designed so that on withdrawal the bolt does not touch the firer's face. The light alloy bipod can be allied with a retractable monopod 'spike' under the butt that can be used to act as a holding platform for prolonged periods of use: i.e. the firer can aim the rifle at a selected area with the weight taken on the bipod and spike. An integral box magazine holds five rounds and the trigger assembly can be removed entirely for adjustment (it can even be interchanged between rifles).

Few details of the Model PM have yet been released. The entire rifle weighs about 6 kg (13.23 lb) and there are at least four versions. One is the Counter Terrorist weapon (already in army use) and the first of 1,212 Infantry rifles will be delivered during early 1986. The latter has a 6×42 scope and match sights effective at ranges up to 900 m (984 yards). Small-calibre and long-range variants will also be available.



This version of the Accuracy International rifle is known as the 'Counter Terrorist' model, and is fitted with a spiral muzzle device that will not be fitted to the British Army version. The Army model, known as the 'Infantry', will have a 10-round box magazine and 'iron' sights plus extras such as sling swivels.

L42A1 rifle (basically a Lee-Enfield rechambered for 7.62-mm/0.3-in ammunition, plus telescopic sights), a pair of binoculars, the Scout Regiment telescope and a pair of garden secateurs. Contrary to popular opinion, snipers are not encouraged to have their own personal rifles, if only because a man who places too much faith in a particular rifle loses effectiveness if it becomes lost or damaged: he will have forgotten that the rifle itself possesses no skills, only the man that uses it. The candidate learns how to aim off for wind and moving targets; how to use his 'scope sight properly, but also how to use the 'iron' sights properly. Telescopic sights can get damaged and that is a poor excuse for failure. The binoculars are standard army issue, useful for searching a wide area quickly. The Scout Regiment telescope gives ×20 magnification, allowing detailed searching at long distance, but requires very skilful handling. In order to pass the candidate must identify a minimum of eight out of 12 military objects that are within 300 m (330 yards). These objects are placed so as to be invisible to the naked eye, and all but invisible using binoculars. There are 40 minutes only to locate and identify the objects.

A similarly high standard is required in all other subjects. In order to qualify the sniper has five minutes to conceal himself 150 to 250 m (165 to 275 yards) away from an observer using binoculars. The observer must be unable to see the sniper even when a third man actually touches the sniper's head. At the same time, the sniper must be able to see the observer and must have his sights correctly set for range and winds.

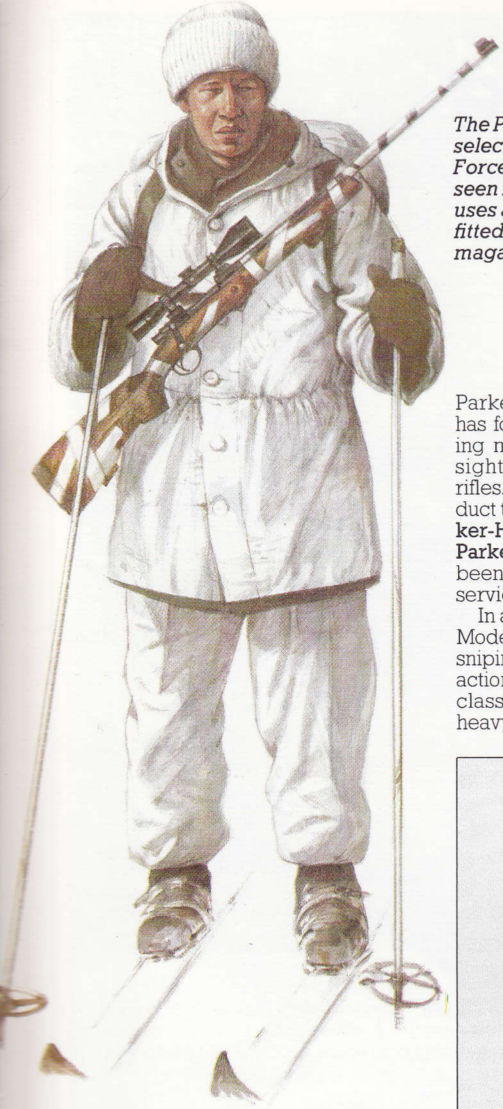
The sniper also has to be able to stalk a distance between 800 and 1000 m (880 and 1,100 yards) to within 150-250 m (165-275 yards) of an observer, working from maps and air photographs. Again he must remain undetected, and as before his sights must be correctly set at all times. But one of the hardest tests is judging distances. Here, eight objects are placed at ranges up to 1000 m (1,100 yards) away: the sniper has to estimate to within 15 per cent of their true ranges, getting a minimum of five out of eight correct, using only his rifle sight and binoculars. The problem is that all objects appear smaller or larger depending on the time of day, the quality of light available, the air temperature and even the observer's own state of health (not a test to do with a hangover).

The secateurs are vital for cutting a peep hole through dense vegetation, and also for cutting personnel camouflage. Initially most trainees tend to cover their already ragged Gilly suits in all manner of bushes and grass, but later come to rely more on the suit itself and on their own ability to merge with any background.

In the past snipers have generally been employed at platoon and even squad level. And while their skill rubs off on the fellow soldiers, raising standards all around, this is now beginning to change. Ideally, snipers would be attached to the support platoon at company level, under command of the intelligence officer. They can easily be detached at the request of an individual platoon commander if the situation demands. But the type of information a trained sniper can supply, and the type of missions he can undertake, are of far more relevance to the company, battalion or even brigade commander, particularly on a widely dispersed battle front. Certainly co-ordination at a more senior level would prevent snipers from shooting at each other which, when one thinks about it, is one of the major hazards that such men face.

UK

Parker-Hale Model 82



The Parker Hale Model 82 was selected by the Canadian Armed Forces as their sniper rifle, and is seen here in winter camouflage. It uses a Mauser-type bolt action and is fitted with a four-round box magazine.

Parker-Hale Limited of Birmingham has for many years been manufacturing match rifles and their associated sights, and also produces sniping rifles. The company's best-known product to date is the 7.62-mm (0.3-in) **Parker-Hale Model 82**, also known as the **Parker-Hale 1200TX**. The Model 82 has been accepted for military and police service by several nations.

In appearance and design terms the Model 82 is an entirely conventional sniping weapon. It uses a manual bolt action very similar to that used on the classic Mauser 98 rifle, allied to a heavy free-floating barrel; the barrel weighs 1.98 kg (4.365 lb) and is manufactured from chrome molybdenum steel. An integral four-round magazine is provided. The trigger mechanism is an entirely self-contained unit that can be adjusted as required.

The Model 82 is available in a number of forms to suit any particular customer requirements. Thus an adjustable cheek pad may be provided if wanted, and the butt lengths can be altered by adding or taking away butt pads of various thicknesses. The sights too are subject to several variations, but the Model 82 is one weapon that is normally supplied with 'iron' match-type sights. If an optical sight is fitted the rear-sights have to be removed to allow the same mounting block to be used. The forward mounting block is machined into the receiver. Various types of 'iron' foresight or optical night sights can be fitted.

The Australian army uses the Model 82 fitted with a Kahles Helia ZF 69 telescopic sight. The Canadian army uses a version of the Model 82/1200TX altered to meet local requirements; this service knows the Model 82 as the **Rifle 7.62-mm C3**. New Zealand also uses the Model 82.

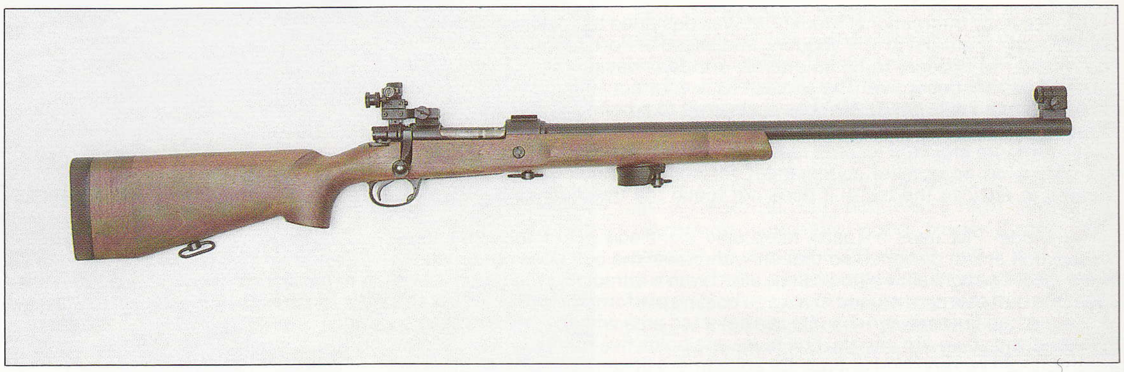
Parker-Hale produces a special training version of the Model 82 known as the **Model 83**. This single-shot rifle is fitted with match sights only and there is no provision for a telescopic sight. It has been accepted by the British Ministry of Defence as the **Cadet Training Rifle L81A1**.

The Model 82 has now been updated to the **Model 85**. This has a revised butt outline compared with the Model 82, a 10-round box magazine and a bipod (optional on the Model 82) is fitted as standard. This weapon was one of the rifles competitively tested by the British army to determine its new sniper rifle, a competition won by Accuracy International.

Specification

Model 82
Calibre: 7.62 mm (0.3 in)
Lengths: 1162 mm (45.75 in); barrel 660 mm (25.98 in)
Weight: unloaded 4.8 kg (10.58 lb)
Muzzle velocity: about 840 m (2,756 ft) per second
Magazine capacity: 4 rounds

Below: In service with the armed forces of Australia, New Zealand and Canada, the Parker Hale Model 82 is intended to hit point targets at up to 400 m in good light, or up to the maximum range of any sights fitted.



WEST GERMANY

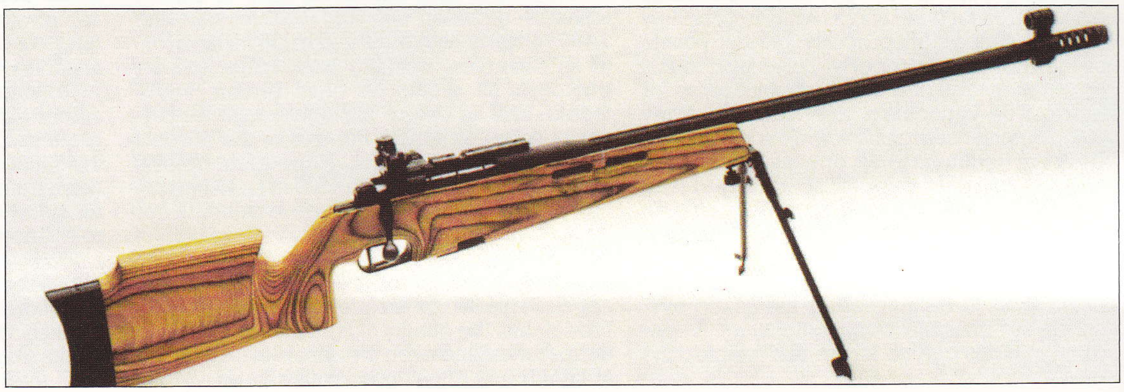
Mauser SP 66 and SP 86

The Mauser-Werke at Oberndorf in West Germany can lay claim to a long and distinguished design and production background for its manual bolt-action rifles that are now known under the blanket name of Mauser. The company's forward-locking bolt action is still widely used by designers who require maximum locking with accuracy, but the masters of its use are now undoubtedly the Mauser-Werke. The company has even introduced its own variations to the action, one of them being the relocation of the bolt handle from the rear of the bolt to the front.

On most rifles this would be of little account, but on a specialist sniper rifle it means that the firer can operate the bolt action without having to move his head out of the way as the bolt itself can be made relatively short; it also means the barrel can be made correspondingly longer for enhanced accuracy. This has been done on a custom-built Mauser-Werke sniper's rifle known as the **Mauser SP 66**. The revised bolt action is but one instance of the care lavished on this weapon, for it also has a heavy barrel, a butt with a carefully contoured thumb aperture, provision for adjustable cheek and butt pads, and a special muzzle attachment. This last is so designed that on firing the great bulk of the resultant flash is directed out of the firer's vision, and it also acts as a muzzle brake to reduce recoil. Reducing both these factors enables a user to fire second and subsequent shots more rapidly.

The standard of finish and careful design throughout the production of the SP 66 is very high. Even such details as roughening all surfaces likely to be handled to prevent slipping have been carried out with meticulous care, and the trigger is extra wide to allow it to be used when gloves have to be worn.

The sights have been selected with equal attention. There are no fixed sights and the standard telescopic sight is a Zeiss-Divari ZA with zoom capability of from ×1.5 to ×6. Night sights can be fitted, though it is recommended that the manufacturer selects and calibrates them to an exact match for the rifle on which they are used. As is usual with such rifles the ammunition



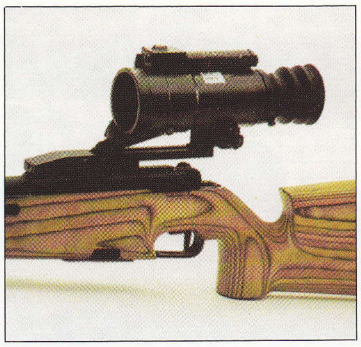
This version of the SP 66, known as the Model 86 SR, is equipped with a set of target sights and a bipod for super-accurate competition shooting; the service version is basically the same weapon fitted with a telescopic sight but without the bipod.

fired from the SP 66 is taken from carefully-selected batches of 7.62-mm (0.3-in) NATO rounds produced specifically for use by snipers.

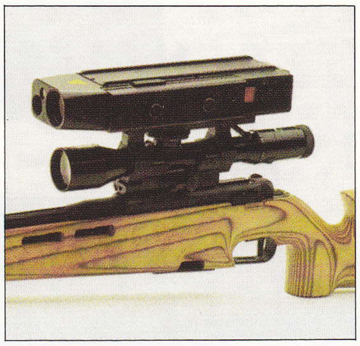
The SP 66 has been a considerable success even though it is manufactured virtually to order only. It is in service with the West German armed forces and more have been sold to a further 12 or so nations, most of which are unwilling to divulge their names for security reasons.

Specification

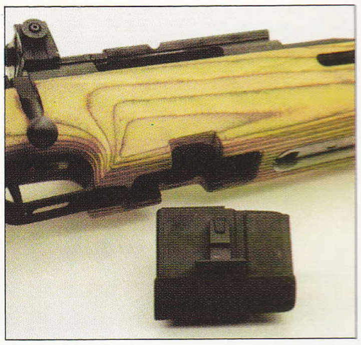
SP 66
Calibre: 7.62 mm (0.3 in)
Lengths: overall not divulged; barrel 680 mm (26.77 in)
Weight: not divulged
Muzzle velocity: about 860 m (2,821 ft) per second
Magazine capacity: 3 rounds



This Mauser SP 86 is fitted with a night vision device. It is recommended that the manufacturer selects and calibrates the sights of each individual weapon.



Long-range accuracy depends on good ammunition, and Mauser select theirs from batches of NATO 7.62-mm cartridges. This Mauser is fitted with a laser rangefinder.



A close-up of the double-row, detachable nine-round magazine of the Mauser SP 86, one of the improvements incorporated into this development of the SP 66.

WEST GERMANY

Walther WA2000

With the **Walther WA2000** it would appear that small-arms design is already in the 'Star Wars' era, for this weapon has an appearance all of its own. The rifle was designed from the outset for the sniping role and the Walther approach has been to put aside all known small-arms design precepts and start from scratch after analysing the requirements.

The most important part of any rifle design is the barrel, for it alone imparts the required degree of accuracy. Walther decided to clamp the barrel at the front and rear to ensure that the torque imparted by a bullet passing through the bore would not lift the barrel away from the intended point of aim. The barrel is also fluted longitudinally over its entire length. This not only provides more cooling area but also reduces the vibrations imparted on firing, vibrations that can also cause a bullet to stray. The designers also decided to go for a gas-operated mechanism to reduce the need for bolt manipulation between shots, and to reduce recoil effects to a minimum the barrel is in direct line with the shoulder so that the muzzle will not be thrown upwards after every shot.

Thus the strange outline of the WA2000 begins to make sense, but there is more to come for the WA2000 is a 'bullpup' design with the gas-operated bolt mechanism behind the trigger group. Such an arrangement makes the overall design that much shorter and easier to handle without reducing the barrel length. It does mean that the ejection port is close to the firer, so special left- and right-hand versions have to be produced.

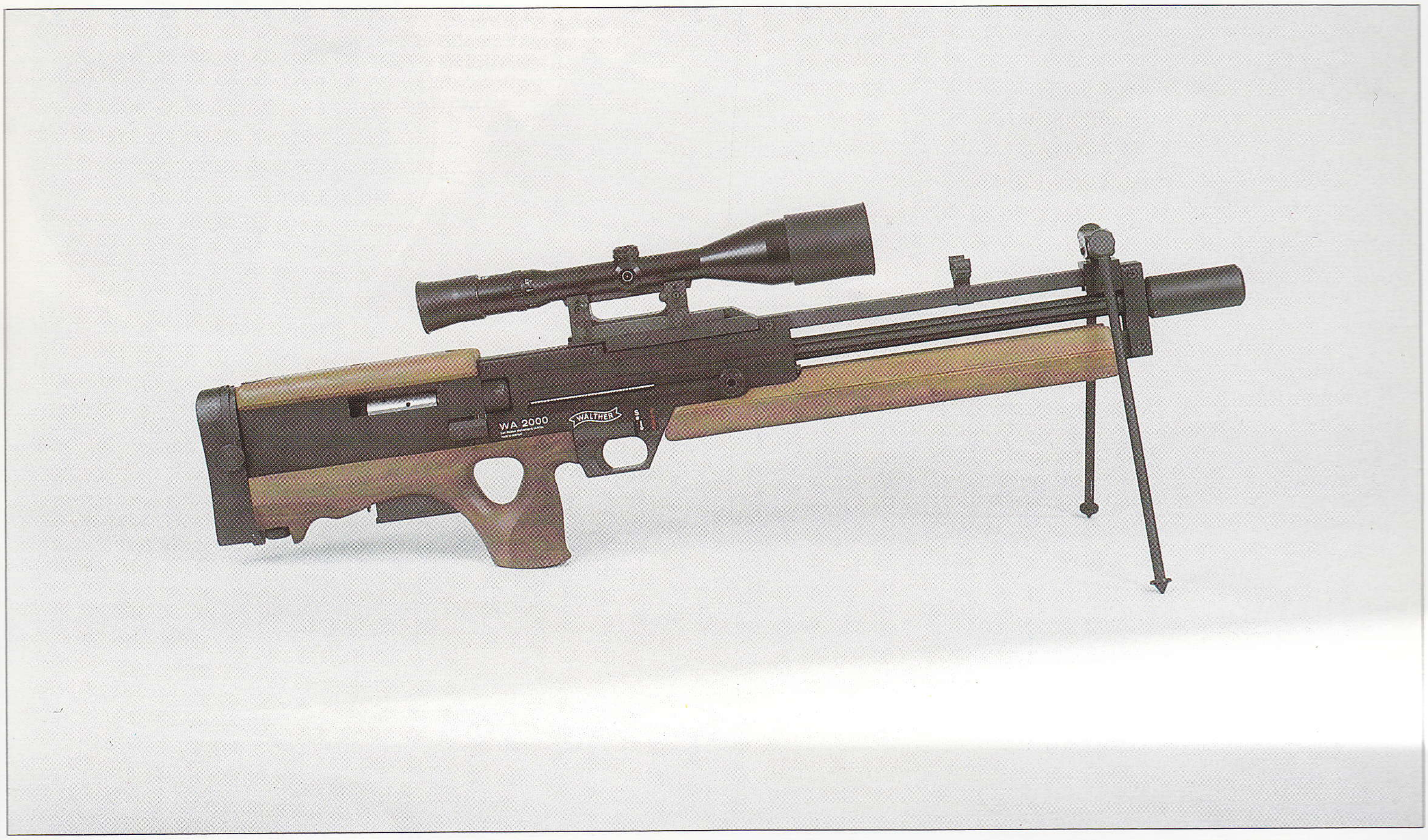
The overall standard of finish of the WA2000 is all that one would expect. The butt pad and cheek rests are adjustable, and there is a carefully-shaped pistol grip for added aiming stability. The normal telescopic sight is a Schmidt und Bender ×2.5 to ×10 zoom, but other types can be fitted.

Walther has decided that the best round for the sniping role is now the .300 (7.62-mm) Winchester Magnum cartridge, but while the WA2000 is chambered for this round others such as the 7.62-mm (0.3-in) NATO or much-favoured 7.5-mm (0.295-in) Swiss cartridge can be accommodated with the required alterations to the bolt and rifling.

Specification

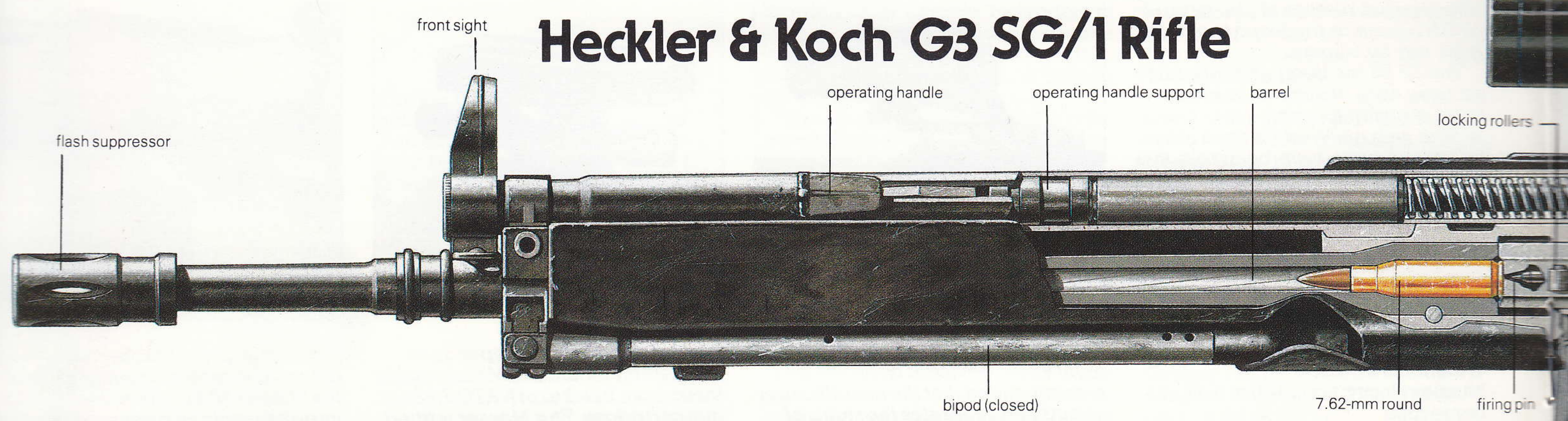
WA2000
Calibre: see text
Lengths: overall 905 mm (35.63 in); barrel 650 mm (25.59 in)
Weights: empty, no sights 6.95 kg (15.32 lb); loaded, with sight, 8.31 kg (18.32 lb)
Magazine capacity: 6 rounds

Supplied with a Schmidt & Bender telescopic sight, the remarkable Walther WA2000 fires the 0.30-in Winchester magnum cartridge.



Heckler & Koch sniper rifles

Heckler & Koch G3 SG/1 Rifle



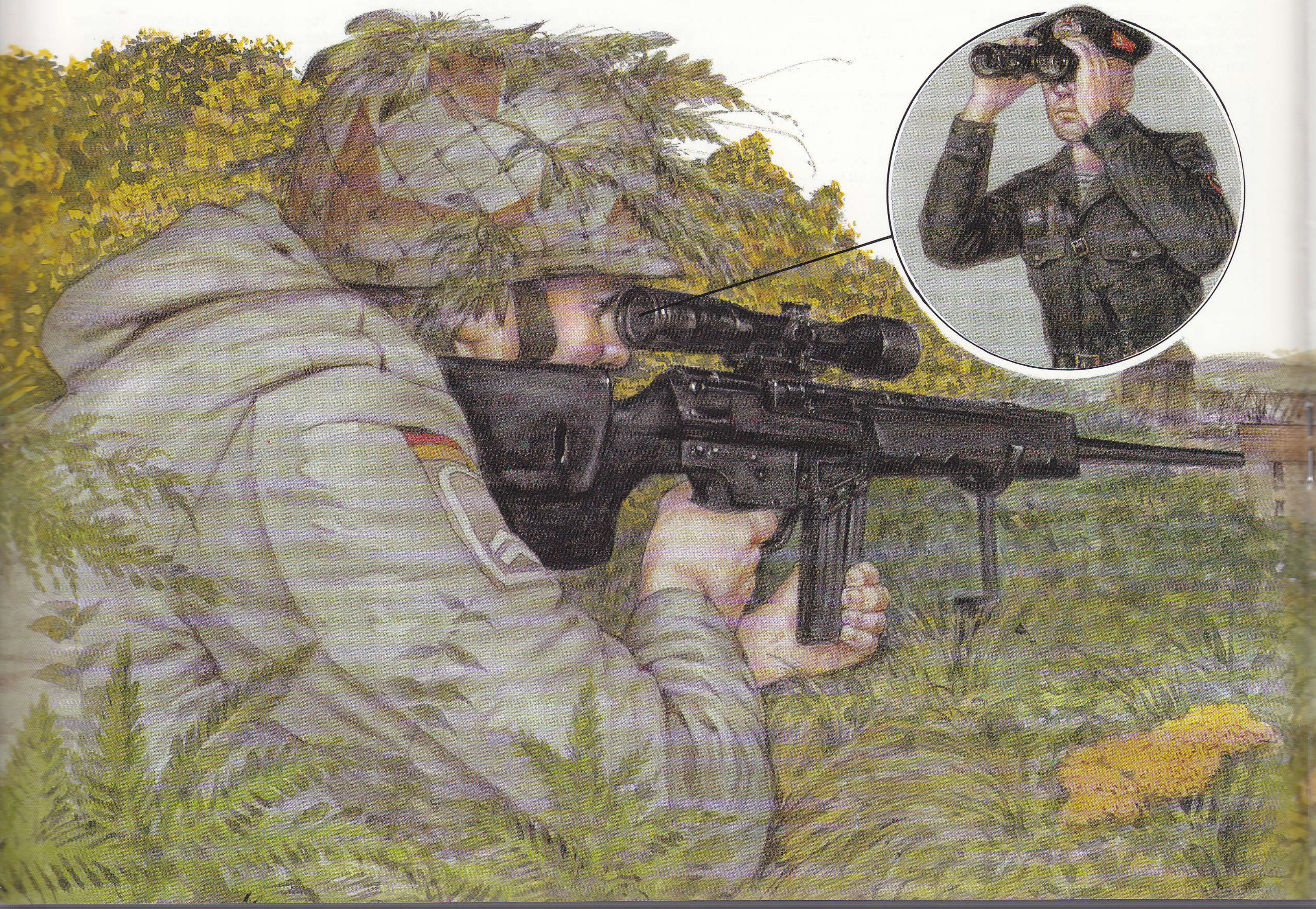
The range of Heckler & Koch rifles has now become so large that a weapon suitable for just about any application can apparently be selected from the array. Sniper's rifles have not been neglected but generally speaking most of these specialized weapons are little more than standard designs produced with a little extra care, a few accessories and a mounting for a telescopic sight. This does not detract from their serviceability or efficiency, many of them being more suitable for field conditions than other designs that have been produced with emphasis on supreme accuracy rather than serviceability. Typical of these Heckler & Koch sniper weapons are the 7.62-mm (0.3-in) **H&K G3 A3ZF** and **G3 SG/1** produced for the West German police. The latter model has a light bipod.

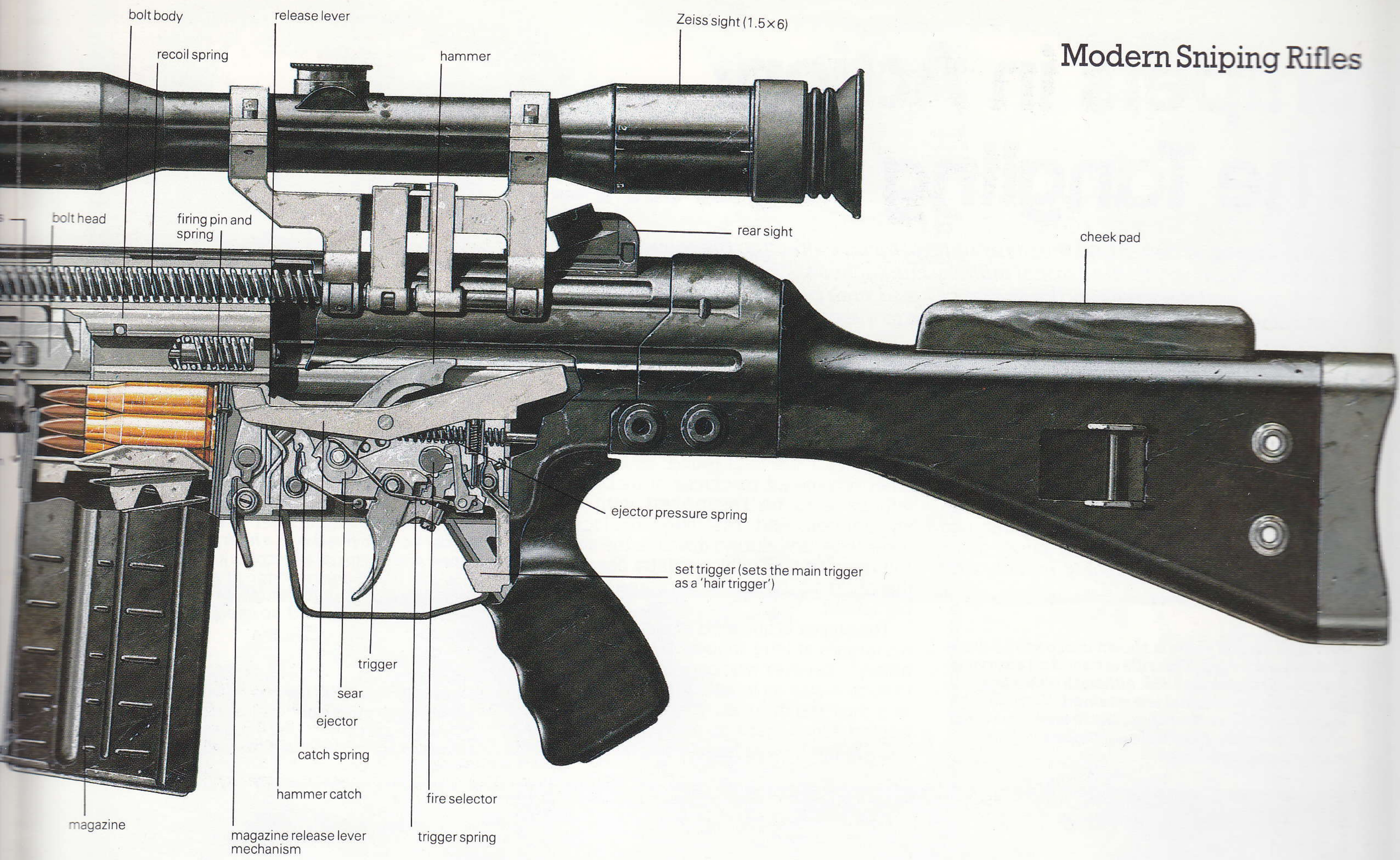
Good as these weapons are they are basically only 'breathed on' versions of standard weapons originally designed with mass production rather than specialization in mind. Accordingly Heckler & Koch has turned its attentions to production of a special design known as the **PSG 1** that continues to use the basic Heckler & Koch rotary lock mechanism but allied to a semi-automatic system and a precision heavy barrel with a polygonal-rifled bore. G3 influence can still be seen in the outlines of the receiver and in the 5- or 20-round magazine housing (it is also possible to load single rounds manually), but the rest is all-new. Forward of the magazine housing is a new fore-stock and the long barrel, while the butt has been reconfigured to the widely-used all-adjustable form.

The PSG 1 uses a ×6 telescopic sight adjustable up to 600 m (656 yards). It has been stated that the weapon is extremely accurate. These claims are difficult to confirm independently as the weapon is still in the development stage with the military and paramilitary police market in mind. It is even possible that the final form of the PSG 1 will alter, the stamped receiver body perhaps being replaced with something purpose-built to ensure that the sight mounting is more rigid. For special purposes there has been mention of a precision aiming tripod for this weapon, but its form is still unannounced. It may well emerge that this tripod will be an adaptation of one of the Heckler & Koch machine-gun mountings; the butt used on the PSG 1 is a much-modified HK 21 machine-gun component.

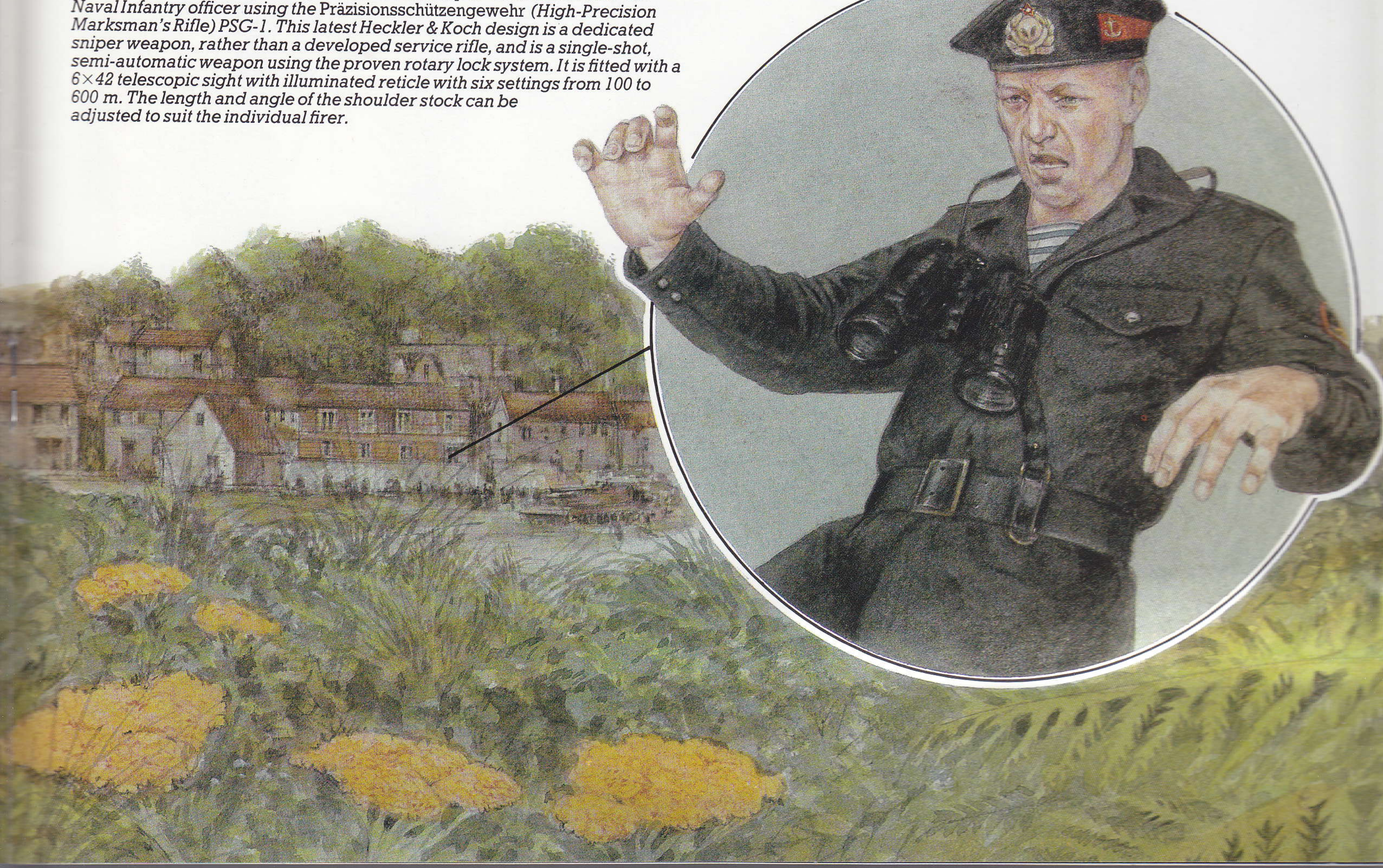
Specification

PSG 1
Calibre: 7.62 mm (0.3 in)
Lengths: overall 1208 mm (47.56 in); barrel 650 mm (25.59 in)
Weight: less magazine 8.1 kg (17.85 lb)
Muzzle velocity: about 860 m (2,821 ft) per second
Magazine capacity: 5 or 20 rounds




bolt body
release lever
Zeiss sight (1.5×6)
recoil spring
hammer
bolt head
firing pin and spring
rear sight
cheek pad
ejector pressure spring
set trigger (sets the main trigger as a 'hair trigger')
trigger
sear
ejector
catch spring
hammer catch
fire selector
magazine
magazine release lever mechanism
trigger spring

Below: The West German army recognizes the value of sniping, particularly against a potential Soviet opponent whose units are especially dependent on a small cadre of officers. Here, a Bundeswehr sniper 'neutralizes' a Soviet Naval Infantry officer using the Präzisionsschützengewehr *(High-Precision Marksman's Rifle) PSG-1. This latest Heckler & Koch design is a dedicated sniper weapon, rather than a developed service rifle, and is a single-shot, semi-automatic weapon using the proven rotary lock system. It is fitted with a 6×42 telescopic sight with illuminated reticle with six settings from 100 to 600 m. The length and angle of the shoulder stock can be adjusted to suit the individual firer.*



Snipers in Action: The Tangling Machine

Clausewitz once described the many natural factors affecting the movement of armies as 'friction'. To the normal military headaches such as river crossings, mountains and the weather, the sniper can add such problems as dead commanders, increasing the normal friction to the point where the whole delicately-balanced army machine seizes up.

The popular image of a sniper is one man firing at a distant enemy from a carefully-concealed position. This may have been true in past conflicts, but it is anticipated that any major war of the future will be a series of mobile battles in which the sniper will have little chance to exercise such traditional skills. What role, therefore, is there for the sniper in such a war, and why is a great deal of thought and money going into providing him with highly sophisticated equipment?

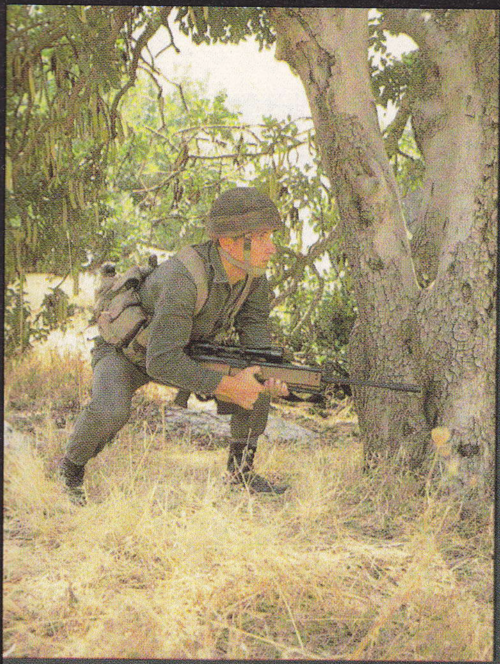
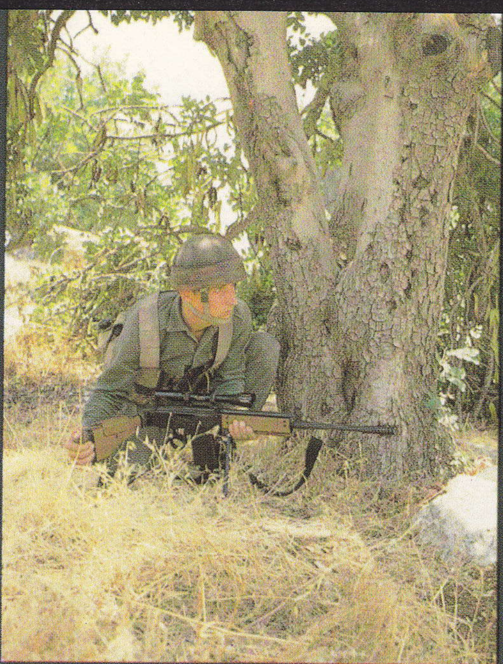
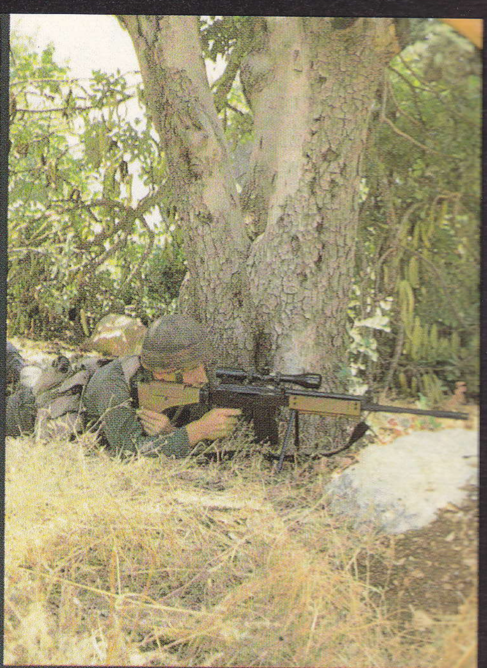
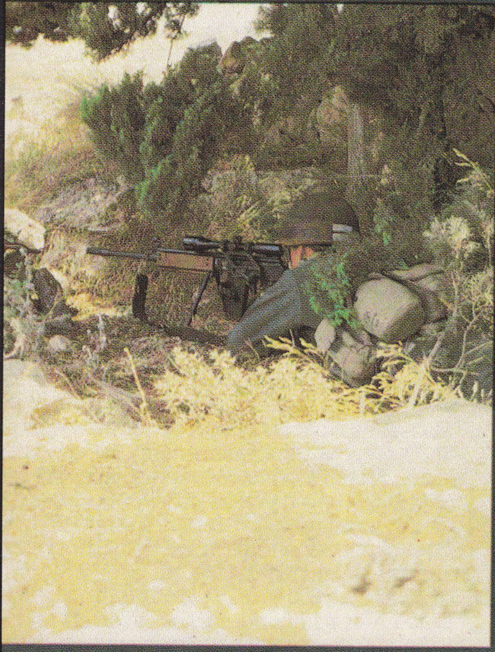
The short answer is that even in this era of highly-mechanized warfare there will be times when battles will settle down to allow both sides to regroup and supply themselves in preparation for the next round: tanks and all the other associated machines of mobile warfare will have to be resupplied with fuel and ammunition, and casualties replaced. This takes time, and during this time the sniper can return to his task, which is little changed from that of old, i.e. being the big game hunter of the battlefield.

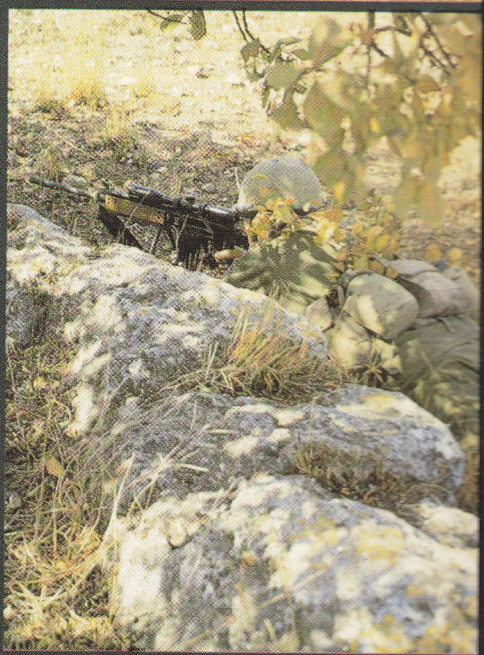
The sniper is not just a killer who can pick off his targets at long ranges. He is also a highly-trained observer who can move across country in such a way as to avoid notice by an enemy and thus reach areas in which he is not expected. Once there he does not simply fire at will. He has to save his all-important fire for the

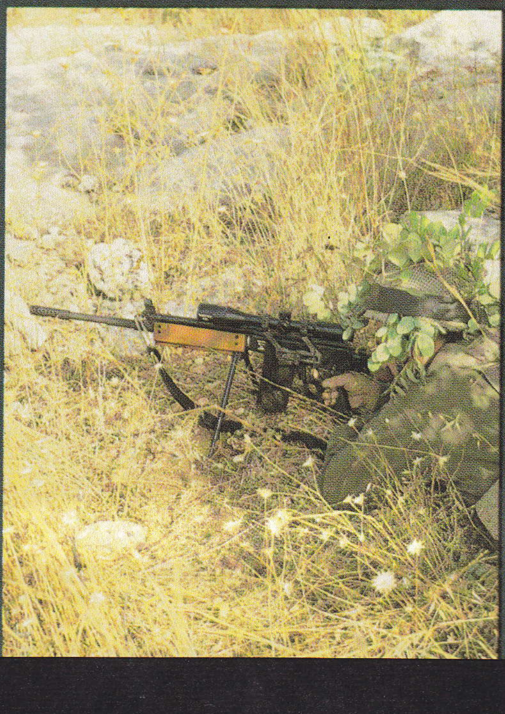
The Steyr AUG assault rifle can be produced in a sniper version fitted with a heavy barrel, a folding bipod and the usual telescopic sight. However, the 5.56-mm (0.219-in) cartridge fired is designed for relatively close ranges and lacks the power of the heavier 7.62-mm round, so its effectiveness is limited.

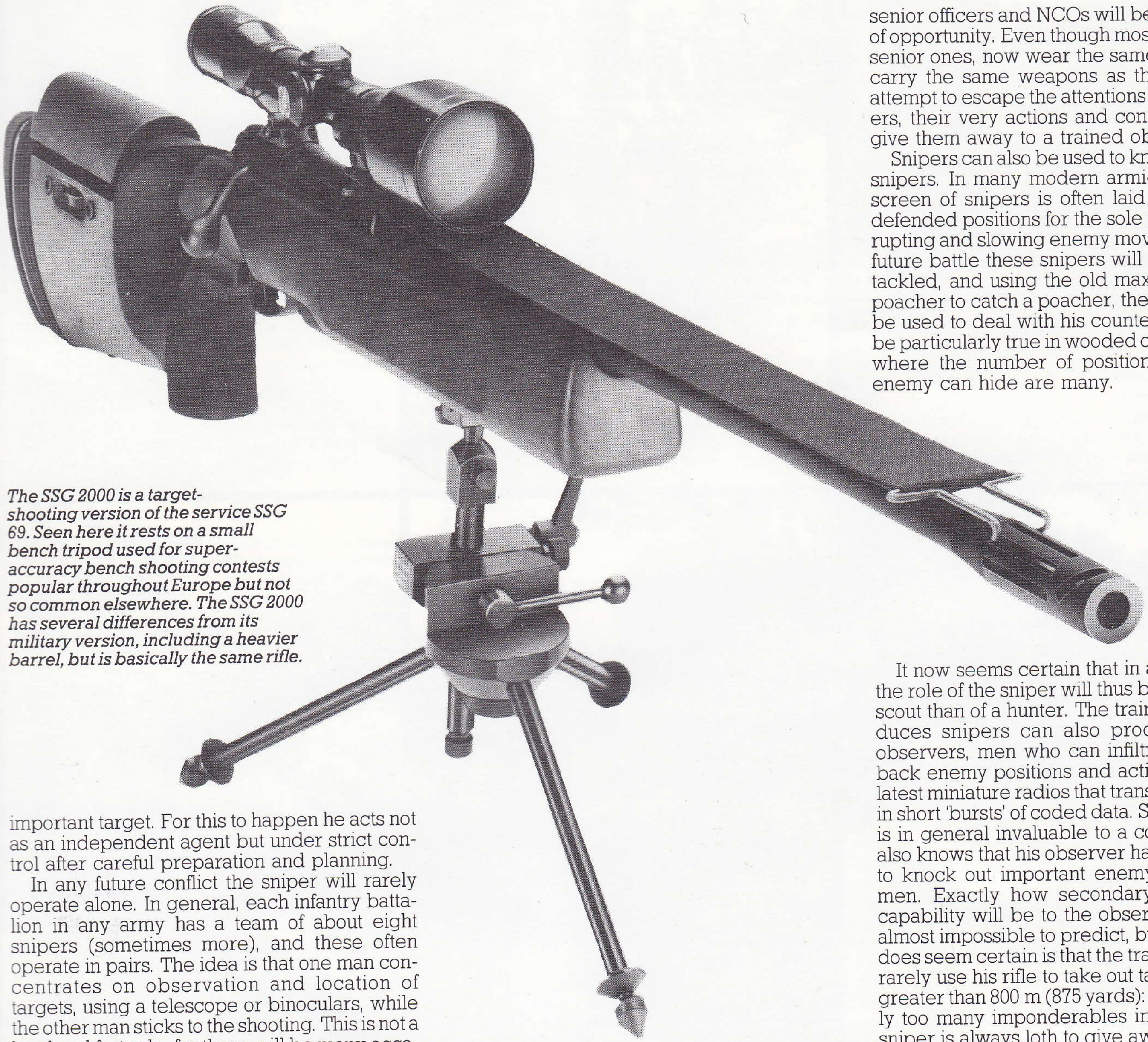
Right: The Galil sniper rifle is a first-rate weapon, externally similar to the standard assault rifle from which it was developed but in fact a very different gun; each part is manufactured to a very high standard and is capable of impressive accuracy.

An FR-F1 sniper's rifle is shown in use somewhere in the French Alps. This rifle is based on a service weapon first used in 1936, although only a few parts from the original are retained. Normally the sniper would use the bipod, but in snow this is not always possible. Note the unorthodox holding method employed here.







The SSG 2000 is a target-shooting version of the service SSG 69. Seen here it rests on a small bench tripod used for super-accuracy bench shooting contests popular throughout Europe but not so common elsewhere. The SSG 2000 has several differences from its military version, including a heavier barrel, but is basically the same rifle.

important target. For this to happen he acts not as an independent agent but under strict control after careful preparation and planning.

In any future conflict the sniper will rarely operate alone. In general, each infantry battalion in any army has a team of about eight snipers (sometimes more), and these often operate in pairs. The idea is that one man concentrates on observation and location of targets, using a telescope or binoculars, while the other man sticks to the shooting. This is not a hard and fast rule, for there will be many occasions when the snipers will be operating primarily as observers and will use their weapons only if absolutely necessary or if a target of importance is detected. At other times the sniper may work alone.

Interval in warfare

In the static conditions produced by the intervals in mobile warfare there is much the sniper can do. He can infiltrate enemy positions to observe movements and strengths, and he can disrupt and unsettle an enemy attempting to recuperate or carry out maintenance tasks. And if he remains within his own defended area the sniper can keep watch for an enemy carrying out exactly the same infiltration tactics in return. He can also prevent enemy reconnaissance patrols from getting too close by skilful anticipation of the enemy's likely approach paths and the establishment of an appropriate ambush point.

In more mobile conditions the sniper can still have an important battlefield role. Infantry do not constantly operate from the armoured confines of personnel carriers: to close with an enemy they have to leave their 'battle taxis' and fight on foot. They then become prone to all the battlefield hazards encountered by the foot soldiers of the past: machine-gun or other weapon fire can then pin them down, often from undetected fire positions.

Under such circumstances the sniper may infiltrate enemy positions before an advance gets under way. Using camouflage and stealth, small teams of snipers can possible work their way through the enemy lines to lie in wait until their colleagues make their move. They can then smooth the advance by detecting and knocking out weapon positions from the rear, probably with the old ploy of knocking out the weapon rather than its team. In past conflicts a heavy weapon such as a machine-gun or mortar was often taken out of action far more effectively by a single well-placed armour-piercing bullet than by the slower and more uncertain method of knocking out every member of the weapon team: the same no doubt applies to modern weapons such as missile-launchers, and some sniper teams will no doubt be detailed to infiltrate as far into the enemy rear as the artillery lines to create mayhem and general disruption. Weapons will not be the only targets to be engaged. As always the enemy senior officers and NCOs will be prime targets of opportunity. Even though most officers, even senior ones, now wear the same uniforms and carry the same weapons as their men in an attempt to escape the attentions of enemy snipers, their very actions and conduct generally give them away to a trained observer.

Snipers can also be used to knock out enemy snipers. In many modern armies an advance screen of snipers is often laid out in front of defended positions for the sole purpose of disrupting and slowing enemy movements. In any future battle these snipers will still have to be tackled, and using the old maxim of setting a poacher to catch a poacher, the sniper will still be used to deal with his counterpart. This will be particularly true in wooded or close country where the number of positions in which an enemy can hide are many.

It now seems certain that in a future conflict the role of the sniper will thus be more that of a scout than of a hunter. The training which produces snipers can also produce excellent observers, men who can infiltrate and report back enemy positions and activities using the latest miniature radios that transmit information in short 'bursts' of coded data. Such information is in general invaluable to a commander who also knows that his observer has the capability to knock out important enemy weapons and men. Exactly how secondary this offensive capability will be to the observing function is almost impossible to predict, but one thing that does seem certain is that the trained sniper will rarely use his rifle to take out targets at ranges greater than 800 m (875 yards): there are usually too many imponderables involved and the sniper is always loth to give away his position.

Why then, one might ask, is so much effort directed towards designing and producing the super-accurate weapons that are featured in this study? The short answer is that they are intended more for internal security and terrorist/hostage situations than overt military conflict. Weapons such as the Iver Johnson Model 300 and Walther WA2000 would not last long on any battlefield. They are too demanding of care and are generally too flimsy to withstand the unavoidable knocks and bumps of standard military service, even though they can theoretically ensure a hit at 1000 m (1,094 yards). The military sniper is far more likely to be carrying a weapon resembling the SVD, the Galil sniping rifle, or the US Marines' M49A1, a weapon that would not have looked too much out of place on a World War II battlefield. Whatever weapon he carries, the military sniper of any future conflict will still have to know that when he sees a target he will be able to hit it, first time and effectively. Even if the battle moves to and fro around him the sniper will still be there, watching and waiting, still carefully concealed and with a definite objective in mind: to use his observation skills and his skill-at-arms for the maximum possible results.

USSR

SVD

Anyone who reads accounts of the Great Patriotic War (World War II to the rest of the world) cannot but help note the emphasis given to sniping by the Soviet army. That emphasis remains undiminished, and to carry out the sniping role the Soviets have developed what is widely regarded as one of the best sniper's rifles around today; this is the **SVD**, sometimes known as the **Dragunov**.

The SVD (Samozariyadnyia Vintokvka Dragunova) first appeared in 1963, and ever since has been one of the most prized of infantry trophies. It is a semi-automatic weapon that uses the same operating principles as the AK-47 assault rifle but allied to a revised gas-operated system. Unlike the AK-47, which uses the short 7.62-mm (0.3-in)×39 cartridge, the SVD fires the older 7.62-mm×54R rimmed cartridge originally introduced during the 1890s for the Mosin-Nagant rifles. This remains a good round for the sniping role, and as it is still used on some Soviet machine-guns availability is no problem.

The SVD has a long barrel, but the weapon is so balanced that it handles well and recoil is not excessive. If the long barrel is not a decisive recognition point then the cut-away butt certainly is. The weapon is normally fired using a sling rather than the bipod favoured elsewhere, and to assist aiming a PSO-1 telescopic sight is provided. This is secured to the left-hand side of the receiver and has a magnification of ×4. The PSO-1 has an unusual feature in that it incorporates an infra-red detector element to enable it to be used as a passive night sight, althought it is normally used in conjunction with an independent infra-red target-illumination source. Basic combat sights are fitted for use if the optical sight becomes defective.

Perhaps the oddest feature for a sniper rifle is that the SVD is provided with a bayonet, the rationale for this remaining uncertain. A 10-round box magazine is fitted.

Tests have demonstrated that the SVD can fire accurately to ranges of well over 800 m (875 yards). It is a pleasant weapon to handle and fire, despite the lengthy barrel. SVDs have been provided to many Warsaw Pact and other nations and it has been used in Afghanistan, some ending in the hands of the guerrillas, who are certainly no newcomers to sniping. The Chinese produce a direct copy of the SVD and offer this version for export, quoting an effective range of 1000 m (1,094 yards).

Specification

SVD

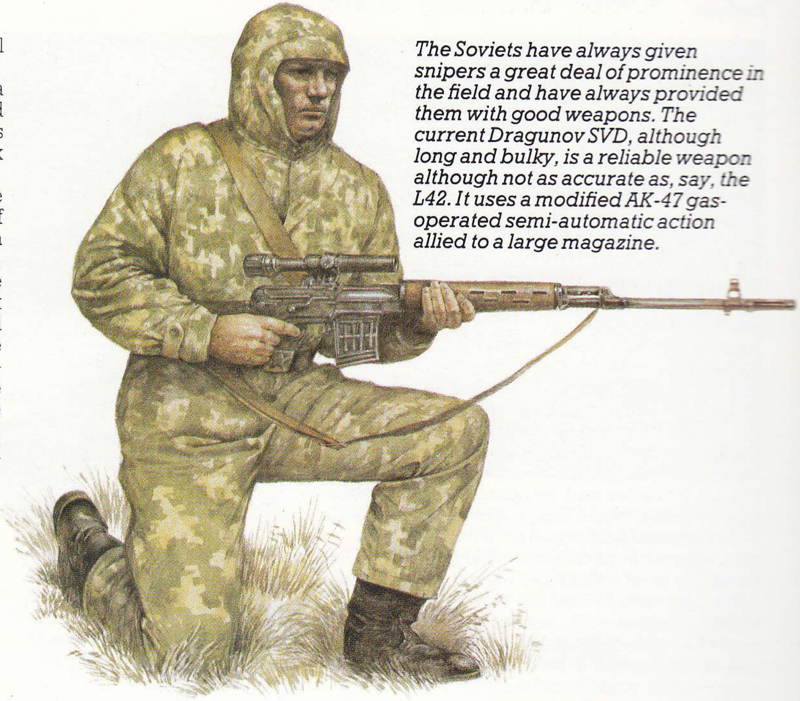
Calibre: 7.62 mm (0.3 in)

Lengths: overall less bayonet 1225 mm (48.23 in); barrel 547 mm (21.53 in)

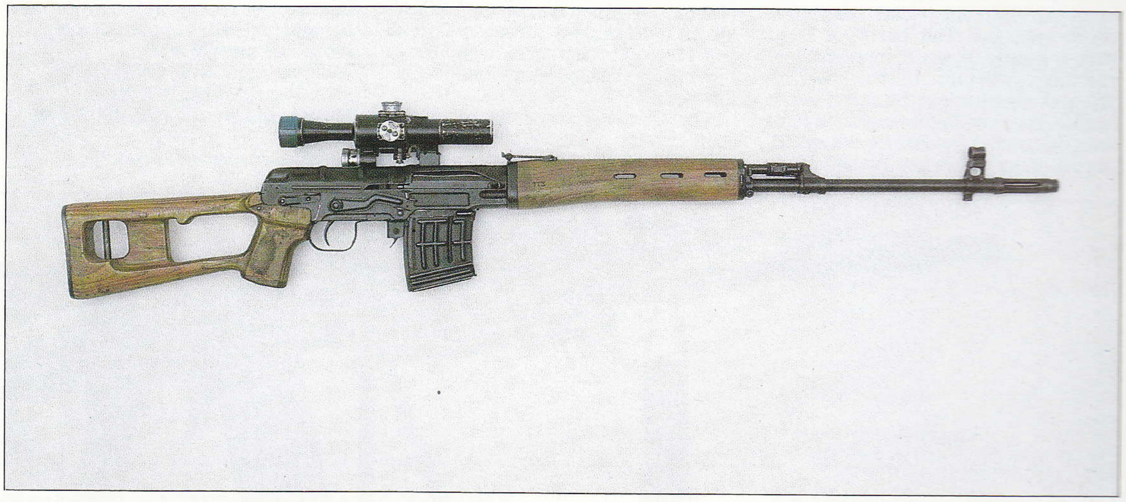
Weight: complete, unloaded 4.385 kg (9.667 lb)

Muzzle velocity: 830 m (2,723 ft) per second

Magazine capacity: 10 rounds



The Soviets have always given snipers a great deal of prominence in the field and have always provided them with good weapons. The current Dragunov SVD, although long and bulky, is a reliable weapon although not as accurate as, say, the L42. It uses a modified AK-47 gas-operated semi-automatic action allied to a large magazine.



Right: The Dragunov uses a bolt system similar to that of the AK-47 and its derivatives, but it is modified to suit the different characteristics of the rimmed 7.62 mm ×54 cartridge originally produced in 1908 for the Moisin-Nagant rifle.

The Dragunov has an excellent sight which displays a graduated range-finding scale, based on the height of the average man. By fitting the target into the grid, the firer gets an accurate idea of the range and aims accordingly. Simple, but effective.

China produces a direct copy of the SVD and is now offering it for export with various extras including this bayonet/wire-cutter.

ISRAEL

Galil Sniping Rifle

Ever since Israel was formed in 1948 the role of the sniper within the Israeli armed forces has been an important one, but over the years snipers have usually been equipped with an array of weapons from all around the world. At one point attempts were made to produce sniper rifles locally, so for a period Israeli army snipers used an indigenous 7.62-mm (0.3-in) design known as the **M26**. This was virtually a hand-made weapon using design features from both the Soviet AKM and Belgian FAL rifles. But for various reasons the M26 was deemed not fully satisfactory, so work began on a sniping rifle based on the Israel Military Industries 7.62-mm Galil assault rifle, the standard Israeli service rifle.

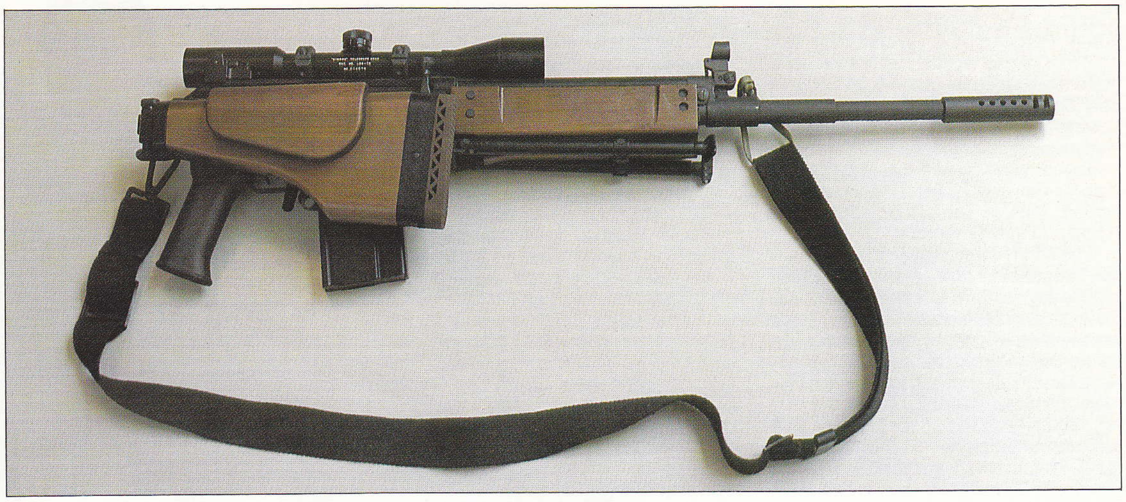
The resultant **Galil Sniping Rifle** bears a resemblance to the original but it is virtually a new weapon. Almost every component has been redesigned and manufactured to very close tolerances. A new heavy barrel is fitted, as is an adjustable bipod. The solid butt (which can be folded forward to reduce carrying and stowage bulk) has an adjustable butt pad and cheek rest, while a Nimrod ×6 telescopic sight is mounted on a bracket offset to the left of the receiver. The mechanism is now single-shot only, the original Galil 20-round magazine being retained. The barrel is fitted with a muzzle brake/compensator to reduce recoil and barrel jump on firing. A silencer can be fitted to the muzzle, but subsonic ammunition must then be used. As would be expected, various night sights can be fitted.

The Galil Sniping Rifle is now in production and has been offered for export. It is a very serviceable weapon that is far more suitable for the rigours of military life than many of the current crop of super-accuracy models. Despite its basic design approach it can still place groupings of less than 300 mm (11.8 in) at a range of 600 m (656 yards), which is more than adequate for most sniping purposes. Careful selection of the ammunition and use of the bipod ensures even better performances.

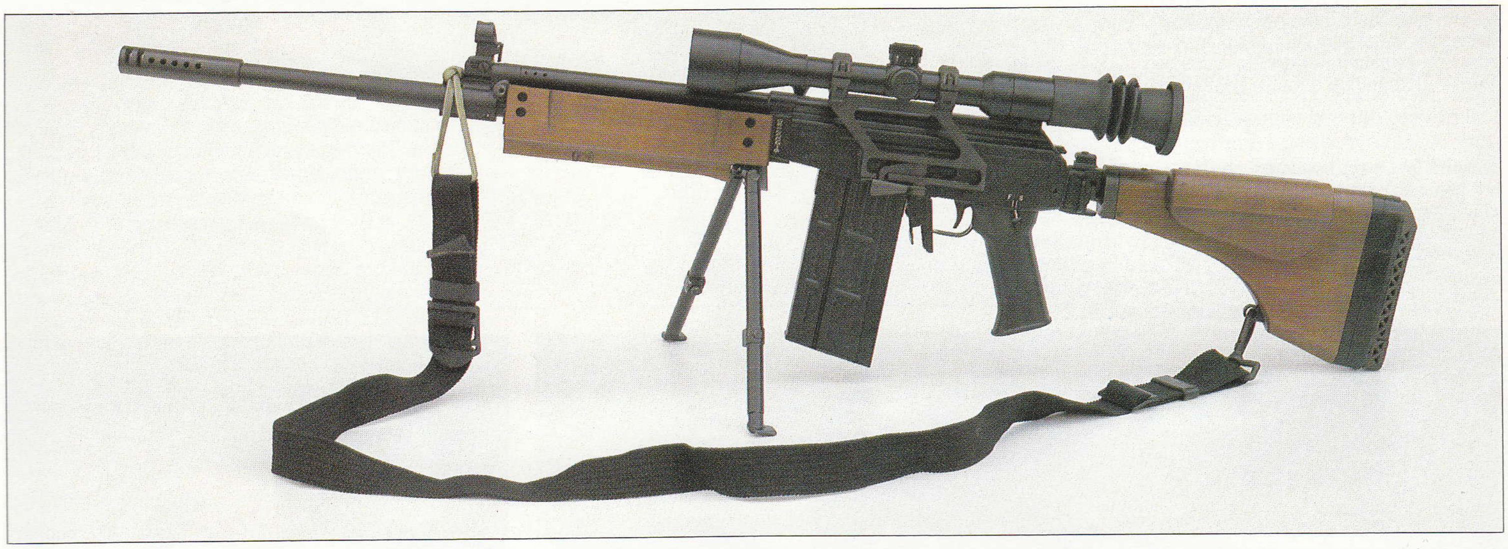
The Galil Sniping Rifle retains its 'iron' combat sights. When not in use the rifle is kept in a special case together with the telescopic sight, optical filters to reduce sun glare when using optical sights, a carrying and firing sling, two magazines and the all-important cleaning kit.

Specification

Galil Sniping Rifle
Calibre: 7.62 mm (0.3 in)
Lengths: overall 1115 mm (43.9 in); barrel 508 mm (20 in)
Weights: rifle only 6.4 kg (14.1 lb); complete 8.02 kg (17.68 lb)
Muzzle velocity: 815 m (2,674 ft) per second
Magazine capacity: 20 rounds



The design of the Galil sniper rifle was shaped by the IDF's extensive battlefield experience, and it is perhaps not surprising that the gun is built more for reliability in combat than exceptional accuracy in ideal conditions.



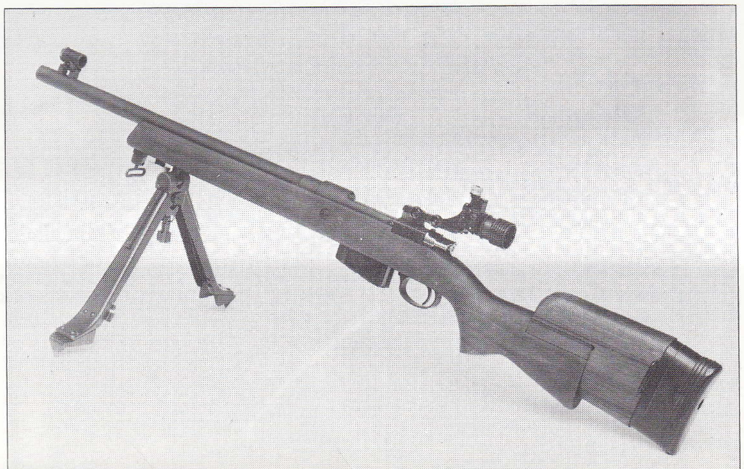
The semi-automatic Galil is a gas-operated weapon with a rotating bolt and a 20-round magazine. It fires standard NATO 7.62 mm ×51 and is built to hit the head at 300 m, half-body at 600 m and full figure at 800-900 m.

BELGIUM

FN Model 30-11

Fabrique Nationale (FN) has for long kept an astute eye on the arms market from its Herstal headquarters, so when it noted an increased demand over recent years for highly accurate rifles for use against point targets the company came up with the **FN Model 30-11**. At first sight the Model 30-11 appears to be a highly conventional design. And so it is, though in order to make the weapon as accurate as possible it has been designed and manufactured with great care to obtain the best possible results.

The Model 30-11 fires carefully selected 7.62-mm (0.3-in) NATO ammunition. The manual bolt action is the frequently used Mauser forward-locking action but manufactured using a very high standard of craftsmanship. The same can be said of the heavy barrel which is connected to the receiver with great care. A five-round

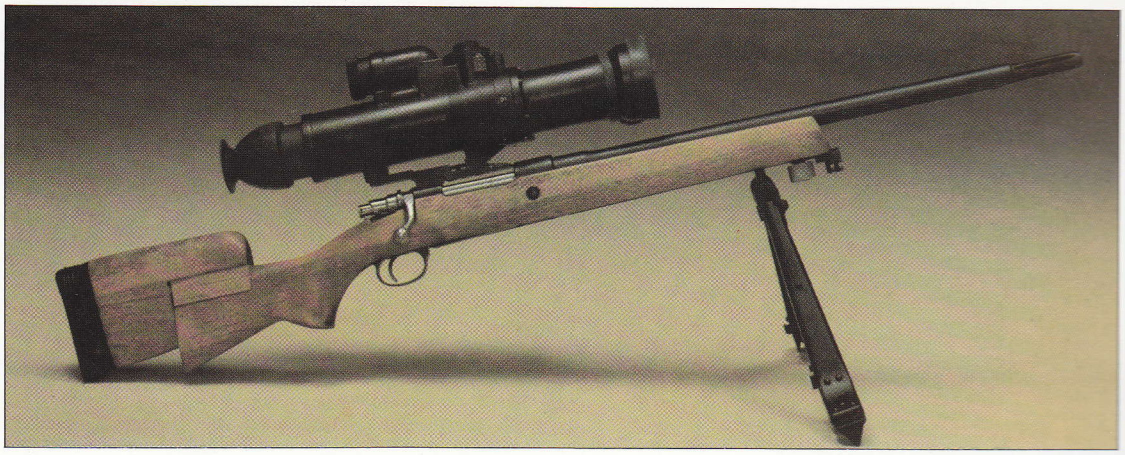


The Belgian FN Model 30-11 rifle was originally produced for police and para-military use, but many are in military hands. The example seen here is fitted with target sights. The odd butt shape is due to the degree of individual adjustment that can be incorporated.

box magazine is used, but normally single rounds only are loaded by hand direct into the chamber. The butt is adjustable in two planes (up and down/forward and back) to suit the individual user's comfort. Swivels are provided for a shooting sling, and there is provision for mounting a bipod under the forestock; the same bipod is used on the FN MAG machine-gun.

This bipod is recommended for use when the Model 30-11 is employed with any of the larger sighting devices that can be fitted. Unlike many other sniper rifles the Model 30-11 can be used with precision-adjustable match-type 'iron' sights, but there is also a wide range of telescopic sights available. For use at night or in poor visibility conditions image intensifier or thermal imaging sights can be used. The sights selected are normally kept in a special protective carrying case together with the rifle when they are being transported or stored.

The Model 30-11 is used by the Belgian army, although most have been issued to Belgian paramilitary police units. Some sales have been made to other nations, but only in small numbers, for the degree of care lavished on producing the Model 30-11 means that the weapon is not cheap. This has apparently prevented the usual appearance of high-class target-shooting versions for commercial sales, although anyone fortunate enough to obtain a standard Model 30-11 with 'iron' sights will find themselves the owner of a superlative match rifle.



Specification
Model 30-11
Calibre: 7.62 mm (0.3 in)
Lengths: overall 1117 mm (43.97 in); barrel 502 mm (19.76 in)
Weight: rifle only 4.85 kg (10.69 lb)
Muzzle velocity: 850 m (2,788 ft) per second
Magazine capacity: 5 rounds

The FN Model 30-11 can be fitted with a wide range of accessories. The large sight seen here is a standard NATO infra-red night vision sight, and the bipod fitted is that used on the FN MAG machine-gun. A range of other such items can be used with this weapon, which is supplied with a special carrying case.

USA

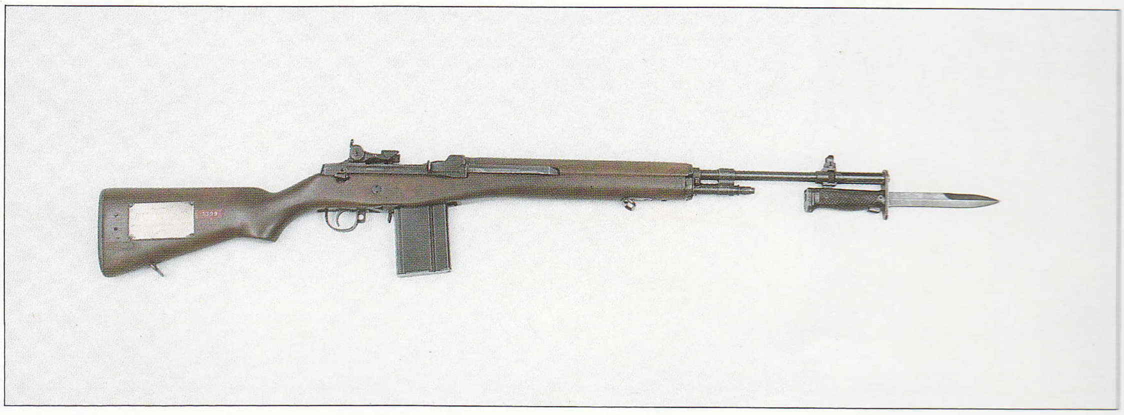
Rifle M21

When the US armed forces made the move from the 7.62-mm (0.3-in) NATO cartridge to the smaller 5.56-mm (0.223-in) round during the late 1960s they not surprisingly decided to retain the larger calibre for the sniping role. This was for the simple reason that the smaller round had been designed from the outset to impart its best performance at ranges much shorter than the usual sniping distances. This meant the retention of the then-current sniping rifle, at the time known as the **Rifle 7.62-mm M14 National Match (Accurised)**, but now known as the **Rifle M21**.

The M21 is a special version of the 7.62-mm M14, for many years the standard US service rifle. It retains the basic appearance and mechanism of the original, but some changes were introduced at the manufacturing stage. For a start the barrels were selected so that only those with the closest manufacturing tolerances were used. These barrels were left without their usual chromium plating inside the bore, again to reduce the possibility of manufacturing inaccuracies. A new muzzle supressor was fitted and reamed to the barrel to ensure correct alignment. The trigger mechanism was assembled by hand and adjusted to provide a crisp release action, and a new walnut stock was fitted, this latter being impregnated with an epoxy resin. The gas-operated mechanism was also the subject of attention to ensure smooth operation. The fully-automatic fire mode is retained on the M21 but normally the weapon is fired on semi-automatic (single shot) only.

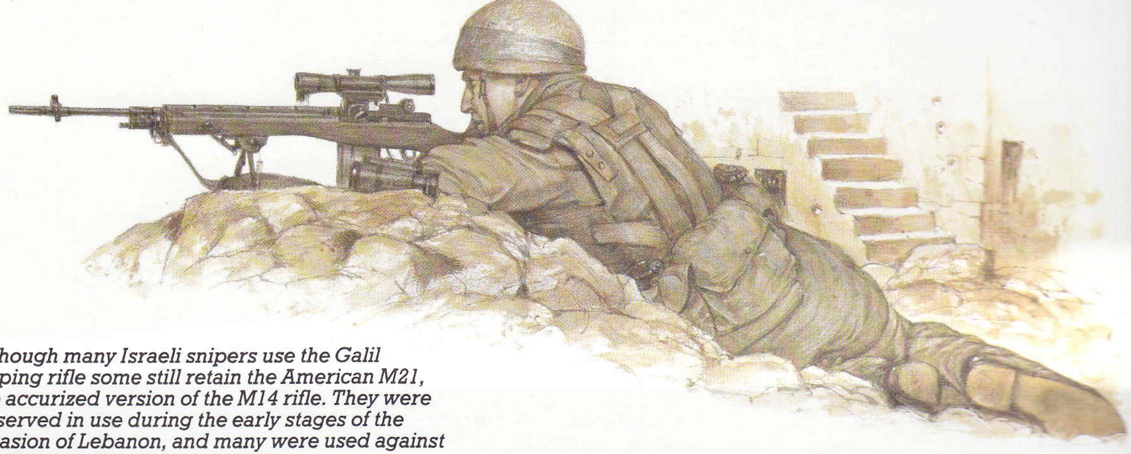
The main change on assembly was the fitting of a ×3 magnification telescopic sight. As well as the usual aiming cross-hairs, this uses a system of graticules that allows the user to judge accurately the range of a man-sized target and automatically set the angle of elevation. Using this sight the M21 can place 10 rounds within a 152-mm (6-in) circle at 300 m (329 yards).

One piece of equipment that can be fitted to the M21 is a sound suppressor. This is not a silencer in the usually accepted sense of the word, but a series of baffles that reduces the velocity of the gases produced on firing to below the speed of sound. This produces a muffled report with none of the usual firing signatures, and its use makes the source of the sound (and the firer) difficult to detect.



Specification
M21
Calibre: 7.62 mm (0.3 in)
Lengths: overall 1120 mm (44.09 in); barrel 559 mm (22 in)
Weight: loaded 5.55 kg (12.24 lb)
Muzzle velocity: 853 m (2,798 ft) per second
Magazine capacity: 20 rounds

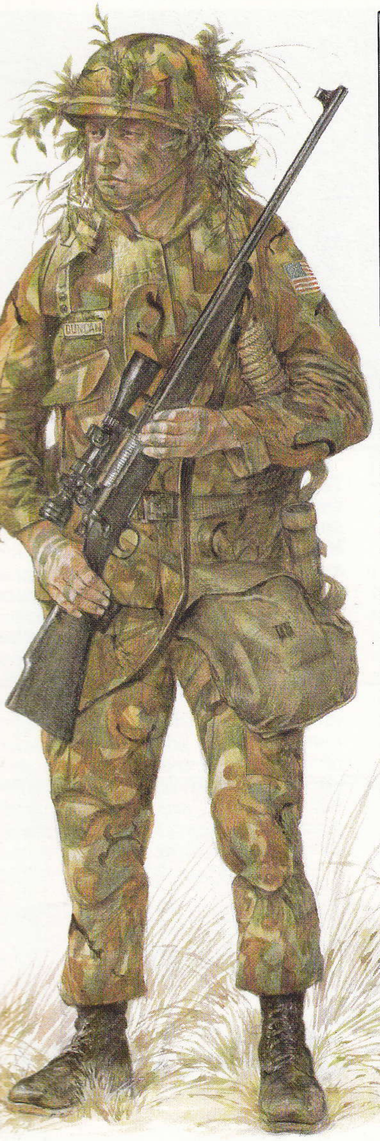
This M14 is from the collection of the Weapons Museum at the School of Infantry, Warminster. The M21 is a special version of the M14, with all parts manufactured to the closest tolerances and with a muzzle suppressor and × 3 scope fitted.



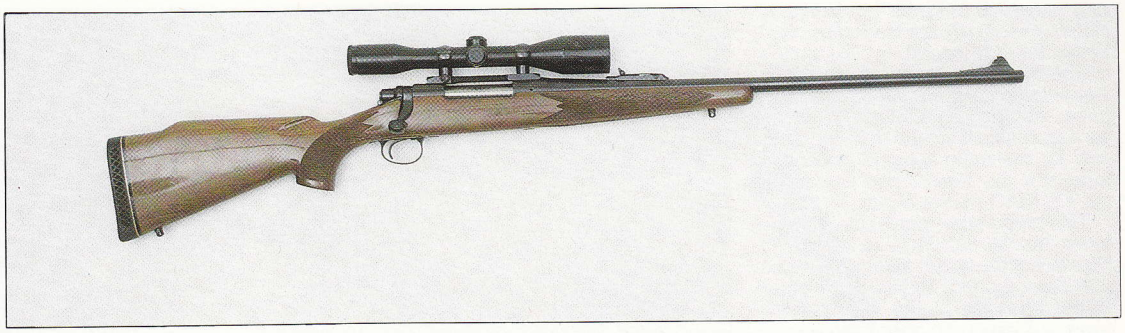
Although many Israeli snipers use the Galil sniping rifle some still retain the American M21, the accurized version of the M14 rifle. They were observed in use during the early stages of the invasion of Lebanon, and many were used against the PLO in Beirut in August 1982.

USA

Sniping Rifle M40A



When the US Marine Corps decided to select their own sniping rifle they ordered numbers of commercial Remington Model 700 rifles, some still with 'iron' sights, as seen here. These became the M40 sniping rifle and many are still in use, despite the introduction of the later M40A1, but they are used only by the Marines.



The Marines adopted the Remington 700 in 1966 and have had the weapon modified to meet their requirements. The M40A1 rifle differs from the M40 in having a heavy stainless steel barrel, a fibreglass stock and a powerful telescopic sight.

The US Marine Corps has always been allowed its own equipment procurement system as it has long been accepted that its particular amphibious role requires equipment to match. Thus when the selection of a new sniping rifle to replace the M1C and M1D weapons based on the M1 Garand rifles came about, this service went its own way.

For the US Marines the sniper has always had a special role, often operating in advance of other supporting units to gain information as well as acting as a long-range killer. So when they contemplated weapons such as the M14/M21 sniper rifles they decided they wanted something better. They could not find exactly what they wanted on the open market but the design that came closest to their requirements was a commercial rifle known as the **Remington Model 700**. This became the **M40** in 1966.

The M40 has a Mauser-type manual bolt action and a heavy barrel. It is normally fitted with a Redfield telesopic sight with a zoom magnification of from ×3 to ×9. A five-round magazine is fitted, and the M40 is an entirely conventional but high-quality design. In service with the US Marines the M40 proved to be perfectly satisfactory, but experience gained with the basic design showed them that something better could be produced. They accordingly asked the Remington Arms Company to introduce a few modifications. These included the replacement of the barrel by a new stainless steel component, the replacement of the wooden furniture by fibreglass and the introduction of a new sight. This new telescopic sight has been produced entirely to demanding US Marine specifications and employs a fixed ×10 magnification. No iron sights are fitted in addittion to this optical sight.

With all these changes embodied the M40 is now the **M40A1**, and it is produced by Remington only for the US Marines. By all accounts it is one of the most accurate sniping rifles ever produced, although exact figures are not available to confirm this assertion. The main reasons for this are the heavy stainless steel barrel and the superb optical sight. The magnification of this sight is much more than usual on such devices, but it produces a bright and clear image for the firer. All the usual windage and other adjustments can be introduced to the sight.

As always with a weapon of this type, the degree of accuracy is dependent on the skill of the user (the US Marines spend a great deal of time training their snipers) and the performance of the ammunition selected, but by all accounts the M40A1 is the rifle 'everyone else wants'.

Specification

M40A1

Calibre: 7.62 mm (0.3 in)

Lengths: overall 1117 mm (43.97 in); barrel 610 mm (24 in)

Weight: 6.57 kg (14.48 lb)

Muzzle velocity: 777 m (2,549 ft) per second

Magazine capacity: 5 rounds

USA

Iver Johnson Model 300 Multi-Caliber Rifle

This weapon has undergone a few changes in name since it first emerged some years back from the drawing boards of the Research Armament Industries concern in Rogers, Arizona. Its full current title is the **Iver Johnson Model 300 Multi-Caliber Long-Range Rifle**, and it is marketed by Napco International Inc.

The Model 300 is another of the attempts to produce the perfect sniping rifle capable of being effective at ranges up to 1500 m (1,640 yards). On the Model 300 everything that can eliminate technical error has been incorporated, these features ranging from a fluted barrel with a counterweight beneath,to reduce vibrations and whip in the free-floating barrel, to an all-adjustable butt with a cheek pad. A ×9 Leupold telescopic sight is the only means of aiming the weapon and a bipod is provided for maximum aiming stability. A manual bolt action is used.

The designers also decided to provide what they regard as the optimum cartridge for long-range sniping. This was developed from an existing Rigby hunting cartridge by Research Armament Industries and has a calibre of 8.58 mm (0.338 in). Tables supplied to demonstrate the efficiency of this cartridge show that it has a much higher muzzle velocity than most comparable rounds and a considerably higher muzzle energy, giving the bullet a flatter ballistic path over longer ranges. However, the designers also realized that the acceptance of this new cartridge might be an uphill task, so they have also produced barrel and bolt head to enable existing 7.62-mm (0.3-in) NATO cartridges to be used; the calibres can be switched from one to the other as required. This provides the Model 300 with its 'Multi-Caliber' designation.

To date the Model 300 has had a mixed reception. It has attracted much attention by its very appearance but apparently hard orders have been slow in coming. Unconfirmed reports speak of some being used by US Special Forces, but that is all. The US Marines have procured trial numbers of the **Model 500**, a much larger and heavier version of the Model 300 that fires the 12.7-mm (0.5-in) machine-gun cartridge. The ballistic limitations of this cartridge apparently ensured that the Model 500 was not a great success with the US Marines, and one feature of the Model 500 they did not accept is the fact that on this larger version the bolt has to be removed to load every round. After a few rounds the bolt often jammed and could not be removed without force, i.e. kicking it out.

Specification

Model 300

Calibre: 8.58 mm (0.338 in) or 7.62 mm (0.3 in)

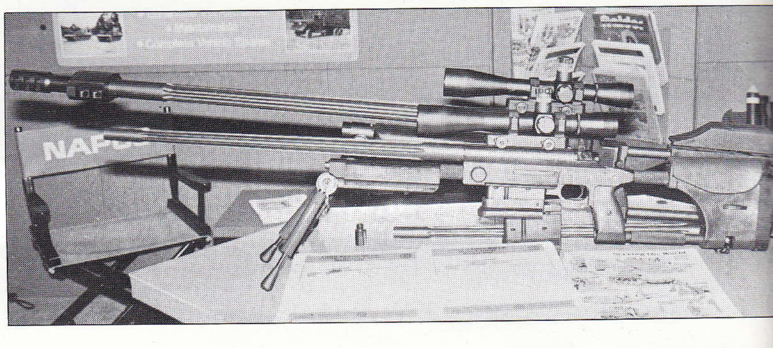
Length: barrel only, both calibres 610 mm (24 in)

Weight: 5.67 kg (12.5 lb)

Muzzle velocity: 8.58-mm 915 m (3,002 ft) per second; 7.62-mm 800 m (2,625 ft) per second

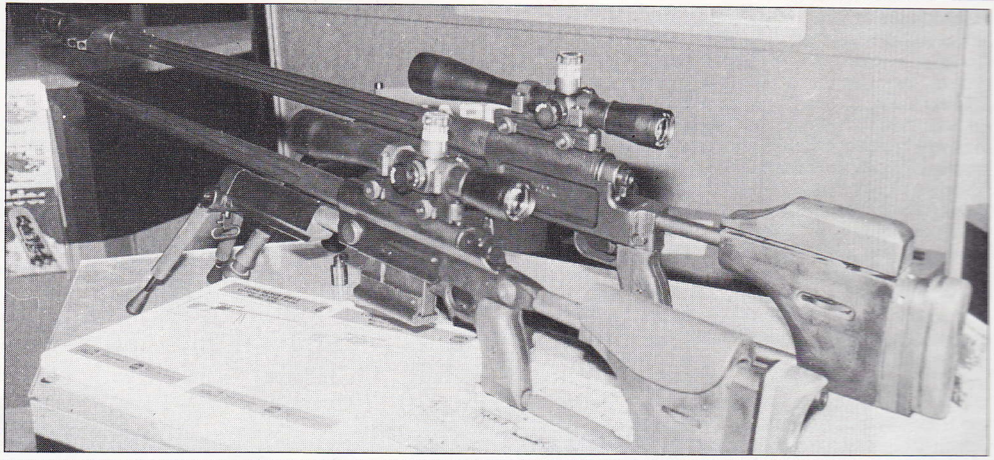
Magazine capacity: 8.58-mm 4 rounds; 7.62-mm 5 rounds

The 'space age' Iver Johnson rifles are intended for super-long range use. The Model 300 (foreground) can fire either a 7.62-mm (0.30-in) or a special 8.58-mm cartridge.



Big Fifty Sniping

Enthusiasm in the USA for monstrous rifle bullets has paralleled that for man-stopping pistols. After experiments with converted anti-tank guns, some shooters have turned to the .50-cal machine-gun bullet. This may seem surprising, as the bullet was designed in World War I and shows its age ballistically.



The Iver Johnson Model 500 (rear) is a larger version of the Model 300, firing 0.50-in (12.7-mm) ammunition to ranges of over 2000 m. Its accuracy is inhibited by the limitations of its machine-gun cartridge, and it has to be loaded by removing the bolt. It has been tested by the US Marine Corps, who were not greatly impressed.

As with so many things these days, the idea of a large-calibre long-range sniping rifle had its origins in the USA. There has always been a sector of the American populace that has wanted to go one stage further and be there 'firstest with the mostest', and so it has been with long-range sniping rifles. Not content with accepting, or appreciating, that most modern military sniper's rifles are already more than adequate for their task, there has been for some time a faction within the American shooting fraternity which dreams of the ideal long-range point target weapon and so does its best to convert these dreams into reality.

The movement toward a 'super rifle' was no doubt fuelled by the arrival on the American small-arms market of numbers of old Finnish Lathi Model 39 20-mm (0.787-in) anti-tank rifles, along with some ammunition. At that time, during the late 1950s, one of these massive rifles could be purchased for as little as $99.95 and a case of 100 rounds cost $84.95 – all via mail order. Knocking over oil drums with one of these powerful weapons was quite the thing for a period, but some shooters realized the long-range potential of the weapon and started thinking in terms of really long-range sniping. Before that avenue could be fully explored the stocks of available ammunition ran out, leaving many shooters with large and inanimate (but interesting) anti-tank white elephants.

New regulations

But the seed had been sown. There was little chance of following the 20-mm calibre line much further, however, for by the late 1960s new federal regulations relating to the type of weapons with which 'Joe Public' could arm himself were being rigorously enforced and 20-mm anti-tank rifles were out (following a series of spectacular bank-busting raids). Large-calibre shooters started to turn to the largest readily-available calibre, and that was the 12.7-mm (0.5-in) Ball M2 and its derivatives, originally designed for use with the Browning M2 heavy machine-guns.

The 12.7-mm cartridge dates back to the end of World War I, but it is a widely used and respected design that is still regarded as one of the best 'man-stoppers' around. It is now technically known as the 12.7-mm×99 and the complete round is 137.8 mm (5.425 in) long. The accepted muzzle velocity (Ball M2) is 854 m (2,802 ft) per second firing a solid bullet weighing 46 grams. When used with the Browning machine-gun this round can deliver its bullet to ranges of over 3500 m (3,828 yards), but at that distance accuracy is minimal.

Without paying too much attention to the ballistic properties of this cartridge, several enthusiasts started to convert existing weapons to take the round; some even decided to scratch-build their own designs using war-surplus Browning machine-gun barrels. One of the earliest of the conversions was a one-off design that was in effect a Soviet PTRD-41 anti-tank rifle chambered for the Browning round. This Soviet weapon originally fired a 14.5-mm (0.57-in) solid projectile, but by fitting a new barrel and some extras such as a powerful telescopic sight the designer found he had produced a rifle that could be fired to a range of well over 1000 m (1,094 yards). The same thing was discovered by an enterprising gun salesman who hand on his hands a sizeable stock of British World War II Boys anti-tank rifles. Originally chambered for a special 0.55-in (13.97-mm) cartridge, these were relatively easily converted for the Browning M2 round, and are currently being sold with the bold advertising slogan 'I reach out and touch someone'.

Interesting though these latter two weapons are, the 12.7-mm concept gained full respectability with the appearance of the Research Armament Industries/Iver Johnson Model 500 long-range rifle. Designed upon much the same lines as the Model 300 Multi-Calibre Rifle, the Model 500 was intended from the outset for the Browning cartridge. The Model 500 also carries over the dramatic and unusual appearance of the Model 300 and many of its advanced design features, but these are emphasized by its long (840 mm/33 in) and heavy barrel. The barrel is fluted longitudinally to improve barrel cooling and at the same time assist in removing the barrel vibrations produced on firing. These vibrations are further dampened by a counterweight, described as an adjustable tuning rod (in a tube under the barrel) and by a large and heavy metal block around the barrel. The metal block is just behind the much-needed muzzle brake fitted to reduce, in part at least, the considerable firing recoil. The Model 500 has the usual all-adjustable butt and a telecopic sight mount.

Accurate aiming

One of the telescopic sights that can be used on the Model 500 has graticules that can allow the firer to judge range quite accurately by placing a man-size target between spaced markers. Using such a sight the manufacturer claims that the rifle will place a round into a circle 872.7 mm (34.36 in) in diameter at a range of 1500 m (1,640 yards). The manufacturer also states that the rifle is 'extremely accurate at ranges in excess of 2000 metres' (2,187 yards). This is all very laudable, but other statistics may place such claims into perspective (unless one is firing specially-prepared ammunition). The ordinary M2 cartridge was designed to be fired in bursts from a machine-gun, so pin-point accuracy was never expected of it. All that is asked of the average cartridge is that it should place its projectile into a 660-mm (26-in) circle at 457 m (500 yards). Taking such a figure out to 1500 m (1,640 yards) a very different picture arises: at such a range attempting to hit a man-sized target with a single round is virtually impossible, and a small truck is a more reasonable target. No doubt a skilled marksman used to handling a Model 500 could do considerably better, but even the average trained sniper would find using a Model 500 accurately at extreme ranges something of a task.

Marines testing

The US Marine Corps has apparently tested the weapon and rejected it. Reports state that apart from the accuracy problems the weapon was found to be too much of a handful at 13.6 kg (30 lb), even without a sight, and the idea of removing the bolt every time a round had to be loaded soon lost its charm, especially when the bolt tended to jam after a few rounds had been fired.

Thus the 12.7-mm long-range rifle quest appears to have been yet another small-arms design blind alley, but a very interesting one at that.

A World War II British anti-tank rifle, the Boys originally fired a special 0.55-in (13.97-mm) anti-tank bullet but after the war some surplus weapons appeared in the USA and were converted to fire the .50-cal Browning machine-gun round. They were marketed with the splendidly tasteless slogan 'I reach out and touch someone'.

YUGOSLAVIA

7.92-mm M76

Yugoslavia is not one of the nations that automatically springs to mind when the international arms market is considered, but it is currently one of the nations most involved in the selling of arms to the Third World. Its small-arms industry is not particularly innovative, preferring to adapt or develop existing designs rather than branch out into startling new ventures. Thus when a requirement came to replace all the elderly World War II sniping weapons still in use by the Yugoslav armed forces it was again decided to adapt an existing design, in this case the M70B1 assault rifle, the Yugoslav derivative of the Soviet AKM.

Not surprisingly the resultant weapon, the **M76** semi-automatic sniping rifle, has much in common with the Soviet SVD. The main difference is the choice of cartridge, which on the M76 is a 7.92-mm (0.312-in) type, a left-over from the German World War II standard rifle calibre. Yugoslavia still uses this cartridge for some machine-guns, so its retention for the sniping role is understandable. For marketing purposes the Yugoslavs also offer the M76 chambered for the 7.62-mm (0.3-in) NATO cartridge and the elderly Soviet 7.62-mm (0.3-in) rimmed cartridge.

Having said that, the M76 resembles the original AKM design much more than does the Soviet SVD. The M76 is a semi-automatic weapon with a long barrel but much of the original M70B1/KM outline survives, including the solid wooden butt. The M76 uses a 10-round box magazine, and a telescopic sight with a ×4 magnification is mounted over the receiver. This sight has much in common with the Soviet PSO-1, including the rubber eyepiece, and is stated to make the M76 effective at ranges of 800 m (875 yards) or more. A variety of night vision devices, usually passive infra-red sights, can be fitted in its place. The normal combat sights of the M70B1 are retained, but the bayonet feature of the SVD is not.

Although the M76 may be regarded as a derivative of a Soviet design there is nothing derivative in its production standards. In common with most other Yugoslav weapons, the M76 is well-made and rugged enough to withstand the hard knocks of service life. From this point of view it is a far more practical weapon than many of the 'super-accuracy' designs now likely to be encountered. The M76 is already in service with the Yugoslav armed forces, but it is difficult to determine exactly how export sales have fared.

Specification

M76

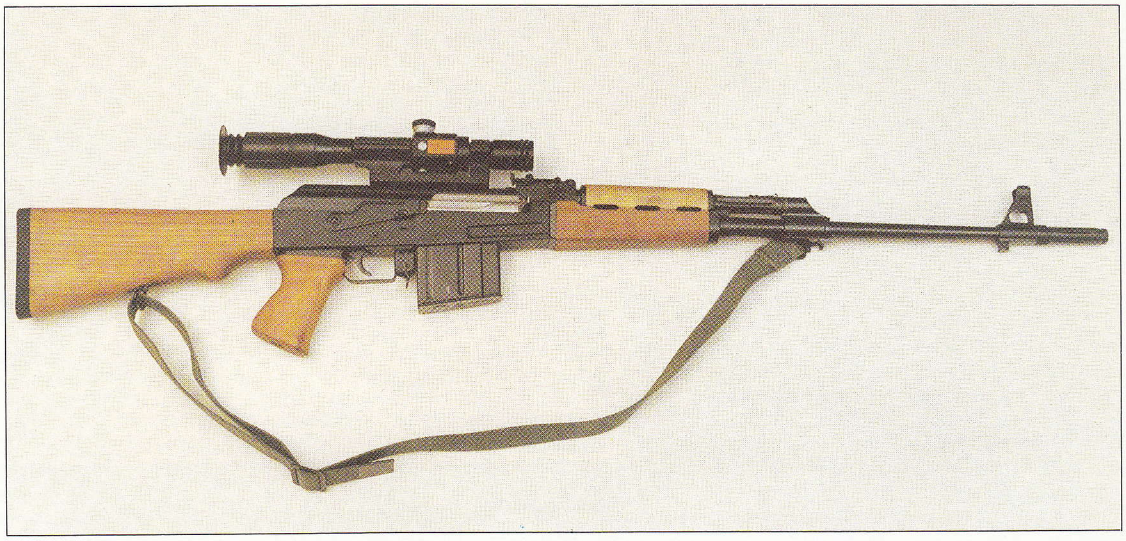
Calibre: 7.92 mm (0.312 in)

Lengths: overall 1135 mm (44.69 in); barrel 550 mm (21.65 in)

Weight: empty, complete 5.08 kg (11.2 lb)

Muzzle velocity: 720 m (2,362 ft) per second

Magazine capacity: 10 rounds



The Yugoslav M76 sniping rifle can be found chambered for 7.92-mm (0.312-in) and both Soviet and NATO 7.62-mm (0.30-in) ammunition. It is basically a specially produced variant of the Yugoslav M70 assault rifle based on the AKM and fitted with a longer barrel and an optical sight mounting.

The concealing face netting used by this Yugoslav army sniper is standard equipment for most snipers. In use here is an M76 rifle, noticeable by its long barrel, fitted with a standard × 4 magnification telescopic sight.